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LAND
STATE PARKS

Mr. Scott Glenn, Director
Office of Environmental Quality Control
Department of Health, State of Hawai'i
235 S. Beretania Street, Room 702
Honolulu, Hawai'i 96813

Dear Mr. Glenn:

Subject: Environmental Impact Statement Preparation Notice
State DLNR, Division of Forestry and Wildlife
Kawainui-Hāmākua Master Plan Project
Kailua, O'ahu, Hawai'i
Tax Map Key: (1) 4-2-003: 017 and 030; 4-2-013: 005, 010, 022 and 038; 4-2-016:
002 and 015; 4-2-017: 020; 4-2-103: 018 and 035; and 4-4-034: 025

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16 SEP 13 P4:30
OFC. OF ENVIRONMENTAL
QUALITY CONTROL

The State of Hawai'i, Department of Land and Natural Resources (DLNR) has determined at the outset that an Environmental Impact Statement (EIS) is required for the Kawainui-Hāmākua Master Plan Project proposed by DLNR's Division of Forestry and Wildlife (DOFAW). This determination was based on the significance criteria under Title 11, Chapter 200, Hawai'i Administrative Rules.

Please publish notice of the availability of this EIS Preparation Notice (EISPN) in the September 23, 2016 issue of *The Environmental Notice*. We have enclosed a completed OEQC Publication Form, a hard copy of the EISPN, copy of the EISPN document in Adobe Acrobat PDF format on a CD, and an electronic copy of the publication form as a Microsoft Word file.

If you have any questions, please contact Ms. Marigold Zoll, O'ahu Forestry and Wildlife Manager, of DOFAW at 973-9787.

Sincerely,

SUZANNE D. CASE
Chairperson

Enclosures

cc: Ronald A. Sato, AICP, HHF Planners
Ati Jeffers-Fabro, DOFAW

17-113

**AGENCY
PUBLICATION FORM**

SEP 23 2016

Project Name:	Kawainui-Hamakua Master Plan Project
Project Short Name:	Kawainui-Hamakua Master Plan Project
HRS §343-5 Trigger(s):	Improvements using State lands and funds; restoration activities and cultural practices within the State Conservation District
Island(s):	O'ahu
Judicial District(s):	Ko'olaupoko District
TMK(s):	(1) 4-2-003: 017 and 030; 4-2-013: 005, 010, 022 and 038; 4-2-016: 002 and 015; 4-2-017: 020; 4-2-103: 018 and 035; and 4-4-034: 025
Permit(s)/Approval(s):	Special Management Area Use Permit, Conservation District Use Permit, Department of the Army Permit
Proposing/Determining Agency:	State of Hawaii Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW)
Contact Name, Email, Telephone, Address	Ms. Marigold Zoll, O'ahu Forestry and Wildlife Manager; Marigold.S.Zoll@hawaii.gov ; (808) 973-9787 State of Hawaii Department of Land and Natural Resources P.O. Box 621 Honolulu, Hawaii 96809
Accepting Authority:	Governor, State of Hawai'i
Contact Name, Email, Telephone, Address	The Honorable David Y. Ige http://governor.hawaii.gov/contact-us/contact-the-governor/ Telephone: (808) 586-0034 Governor, State of Hawai'i Executive Chambers, State Capitol 415 South Beretania Street Honolulu, Hawai'i 96813
Consultant:	HHF Planners
Contact Name, Email, Telephone, Address	Ronald Sato, AICP; rsato@hhf.com ; (808) 457-3172 733 Bishop; Street, Suite 2590 Honolulu, Hawaii 96813

Status (select one)☐ DEA-AFNSI**Submittal Requirements**

Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.

☐ FEA-FONSI

Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.

☐ FEA-EISPN

Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.

☒ Act 172-12 EISPN
("Direct to EIS")

Submit 1) the proposing agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.

☐ DEIS

Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.

☐ FEIS

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- | | |
|---|---|
| <input type="checkbox"/> FEIS Acceptance Determination | The accepting authority simultaneously transmits to both the OEQC and the proposing agency a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice. |
| <input type="checkbox"/> FEIS Statutory Acceptance | Timely statutory acceptance of the FEIS under Section 343-5(c), HRS, is not applicable to agency actions. |
| <input type="checkbox"/> Supplemental EIS Determination | The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice. |
| <input type="checkbox"/> Withdrawal | Identify the specific document(s) to withdraw and explain in the project summary section. |
| <input type="checkbox"/> Other | Contact the OEQC if your action is not one of the above items. |

Project Summary

Provide a description of the proposed action and purpose and need in 200 words or less.

The State of Hawai'i Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW), in partnership with the Division of State Parks (DSP), is preparing an Environmental Impact Statement (EIS) for the Kawainui-Hāmākua Master Plan Project. The State-owned project area encompasses 986 acres in Kailua, on the island of Oahu. The project area includes the Kawainui wetland and upland areas, Hāmākua Marsh Wildlife Sanctuary, and Pu'uoeahu hillside.

Proposed improvements are needed to support DOFAW and DSP's efforts in achieving their agency missions, to sustain and enhance the natural and cultural resources associated with this area, and increase public access and outdoor recreational opportunities. A master plan is being prepared to serve as a guide for programming and implementing future improvements.

Proposed improvements fall into three major categories: 1) natural resource management; 2) cultural resource management; and 3) educational and recreational initiatives. Natural resource management include wetland restoration, upland reforestation, storm water improvements, and support for management operations. Cultural resource initiatives would support traditional Hawaiian cultural practices in the area. Educational and recreational improvements would increase public access, provide passive outdoor recreational use, and support educational programs and stewardship.

KAWAINUI-HĀMĀKUA MASTER PLAN

ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE



SEPTEMBER 2016



Prepared for:
Department of Land and Natural Resources,
Division of Forestry and Wildlife
and
Division of State Parks

KAWAINUI-HĀMĀKUA MASTER PLAN

ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE

SEPTEMBER 2016



Prepared for:
Department of Land and Natural Resources,
Division of Forestry and Wildlife
and
Division of State Parks



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Prepared by:
Helber Hastert & Fee, Planners

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CHAPTER 1: INTRODUCTION AND BACKGROUND



1.1 INTRODUCTION

This document is an Environmental Impact Statement Preparation Notice (EISPN) for the Kawainui-Hāmākua Master Plan Project (“Project”), prepared for the State of Hawai‘i (State), Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW) in partnership with the Division of State Parks (DSP).

The Kawainui-Hāmākua project area (“project area”) is a 986.02-acre area located in the ahupua‘a of Kailua on the Island of O‘ahu. The project area includes the Kawainui wetland and surrounding uplands (Kawainui), Hāmākua Marsh Wildlife Sanctuary (Hāmākua), Pu‘uoeahu hillside, Ulupō Heiau State Historical Park, and Kawainui State Park Reserve.

A *Draft Kawainui-Hāmākua Complex Master Plan* (HHF, 2014) report was prepared through a planning process that involved re-evaluating concepts from an earlier 1994 master plan, information gathering, evaluating other plans prepared for the area, assessments of current conditions and agency missions, community input, and evaluation. The draft plan’s recommendations addressed resource management, wetland enhancement, cultural practices, educational programs, and passive outdoor recreation. The master plan is intended to provide DLNR with a guide for programming, management, and implementing future improvements in the Kawainui-Hāmākua area.

The draft plan was published in May 2014. The public review period for that master planning process has concluded, and public comments received were evaluated. A separate environmental review process is now being undertaken for this project. Work on finalizing the master plan would resume later after completion of the environmental review process.

Therefore, an Environmental Impact Statement (EIS) would now be prepared to assess the environmental impacts of the proposed project. Project improvements addressed under this EISPN are those proposed for implementation over the next 15 years, and consist of concepts from the draft master plan and refinements to those concepts based upon public comments received. This EISPN provides public notification that the EIS process is underway, and is intended to solicit public input regarding the scope of the forthcoming Draft EIS. The EIS would be prepared in accordance with Chapter 343 (Environmental Impact Statements), Hawai‘i Revised Statutes (HRS), as amended (State of Hawai‘i, 2007) and Title 11, Chapter 200 (Environmental Impact Statement Rules), Hawai‘i Administrative Rules (HAR), as amended (State of Hawai‘i, 2008). Table 1.1 includes a summary of pertinent project information.

Table 1.1
Summary of Project Information

Project Name:	Department of Land and Natural Resources Kawainui-Hāmākua Master Plan Project
Applicant:	Division of Forestry and Wildlife (DOFAW) Department of Land and Natural Resources (DLNR) State of Hawai'i 2135 Makiki Heights Drive Honolulu, Hawai'i 96822 Telephone: (808) 973-9787 Contact: Ms. Marigold Zoll, O'ahu Forestry and Wildlife Manager
Accepting Authority:	Board of Land and Natural Resources State of Hawai'i P.O. Box 621 Honolulu, Hawai'i 96809 Contact: Suzanne D. Case, Chairperson
Authorized Agent:	HHF Planners 733 Bishop Street, Suite 2590 Honolulu, Hawai'i 96813 Telephone: (808) 457-3172 Contact: Mr. Ronald Sato, AICP, Senior Associate
Project Location:	The Kawainui-Hāmākua project area ("project area") is located in the Kailua ahupua'a on the windward side of O'ahu. The project area is comprised of three contiguous, but distinct areas; Kawainui, Hāmākua Marsh, and Pu'uoehu hillside. It is generally bounded by Mōkapu Saddle Road and Mōkapu Boulevard to the north, the Kawainui flood control levee and Hāmākua Drive to the east, Kailua Road and Kalaniana'ole Highway to the south, and Kapa'a Quarry Road to the west.
Project Area:	The project area is 986.02 acres
Tax Map Key:	Project area includes 12 State-owned parcels listed below. It does not include three City-owned parcels in the vicinity (model airplane park on Kapa 'a Quarry Road, Kawainui Neighborhood Park at the north end of the levee, and remnant parcel near Mōkapu Saddle Road). 4-2-003: 017 and 030 4-2-013: 005, 010, 022 and 038 4-2-016: 002 and 015 4-2-017: 020 4-2-103: 018 and 035 4-4-034: 025
Existing Use:	Majority of project area consists of wetland (Kawainui and Hāmākua) and upland riparian and forest area that is overgrown with invasive trees and other non-native vegetation. Wetlands include DOFAW maintained ponds constructed by U.S. Army Corps of Engineers. The Kawainui Management and Research Station supports DOFAW management and maintenance activities at Kawainui. Cultural sites include Ulupō Heiau and Nā Pōhaku o Hauwahine where community groups are restoring taro lo'i and native lowland forests. Periodic

Table 1.1 (continued) Summary of Project Information	
Existing Use: (continued):	educational programs and cultural activities occur within the project area in coordination with DLNR. The flood control levee is being used as an outdoor recreational pathway.
Master Plan Proposals:	Major proposals and recommendations address wetland management and restoration, upland reforestation, drainage improvements, restoration and establishment of native Hawaiian cultural sites and practices, educational programs and passive outdoor recreation.
State Land Use District:	Conservation District, Urban District
City Zoning District:	P-1 Preservation (Restricted), P-2 Preservation (General), and R-5 Residential.
Koʻolaupoko Sustainable Communities Plan:	Open Space/Preservation Areas.
Special Management Area:	Project site is within City's SMA boundary.

1.1.1 Need for Environmental Review

This project is subject to the State environmental review process prescribed under Chapter 343, HRS, (known as the Hawai‘i Environmental Policy Act (HEPA)), and Title 11, Chapter 200, HAR. HEPA identifies nine specific types of action that “trigger” environmental review. The proposed project includes agency actions involving three of these triggers:

1. Improvements using State lands and funds; and
2. Wetland restoration activities not already permitted, and establishing a permanent presence at Kawainui to conduct native Hawaiian cultural practices within the State’s Conservation District.

Most of the project area includes wetlands situated within the State’s “Conservation District” that fall under the jurisdiction of the State Board of Land and Natural Resources (BLNR). An existing Conservation District Use Permit (CDUP OA-3068) allows restoration and other resource management-related work to occur in certain areas, and another permit (CDUP OA-3126B) allows improvements at the former Gateway Park’s Mōkapu site. Any improvements beyond that already permitted in these areas would require an amendment or a new CDUP (e.g. facilities supporting cultural practices).

The project area is also situated within the City and County of Honolulu’s (City) Special Management Area (SMA). Existing SMA use permits authorized various pond and habitat restoration activities (Resolution 01-58) and improvements at the Gateway Park’s Mōkapu site (Resolution 02-339). Improvements beyond these permitted areas would require a SMA Use Permit (Major) from the City. Under Chapter 25 (SMA), Revised Ordinances of Honolulu (ROH), compliance with the State’s environmental review process is required, and this EIS is intended to fulfill this requirement.

1.1.2 Applicant and Accepting Authority

The Applicant for the forthcoming Draft EIS is the State DLNR, DOFAW. DOFAW is one of 11 divisions under DLNR responsible for the management of public natural resources in the State of Hawai‘i. Its stated mission is to effectively manage Hawai‘i’s natural, cultural, and historic resources for current and future generations. DOFAW has jurisdiction over the majority of land within the project area, 889.38 acres.

The remaining 96.60 acres of land within the Kawainui-Hāmākua project area are managed by the State DLNR, DSP. DSP’s mission is to manage and administer state parks and land that have high natural, cultural, and scenic value. Although DSP and DOFAW are responsible for different portions of the project area, both are divisions under DLNR, and work cooperatively in partnership with the overall management of Kawainui-Hāmākua.

HHF Planners is serving as the “Authorized Agent” on behalf of the Applicant in the preparation of this EISPN and forthcoming Draft EIS. The project is considered an “Agency Action” under the State’s environmental review regulations because DOFAW is the proposing agency initiating the proposed project.

DOFAW would serve as the responsible agency processing the EIS document. The DLNR would serve as the “Accepting Authority,” determining the acceptability of the Final EIS document, in accordance with Chapter 343, HRS.

1.2 CHAPTER 343, HRS SIGNIFICANCE CRITERIA

Under Chapter 343, HRS, an environmental review typically begins with an Environmental Assessment (EA) to evaluate potential environmental impacts. If any impacts are “significant,” a more detailed Environmental Impact Statement (EIS) is prepared. In this case, the State DLNR, DOFAW has determined upfront that the Kawainui-Hāmākua Master Plan Project has the potential for significant effect on the environment, and is proceeding directly to an EIS. As noted previously, the publication of this EISPN initiates the environmental review process.

1.2.1 Evaluation of Significance Criteria

The determination that project impact on the environment may be significant is based on an evaluation of 13 Significance Criteria prescribed under the State Department of Health’s Administrative Rules, Title 11, Chapter 200. An action may have a significant impact on the environment if it meets any of the following criteria.

1. *Involve an irrevocable commitment to loss or destruction of any natural or cultural resource;*

The project is not expected to result in the loss or destruction of the project area's natural or cultural resources. Project initiatives include continued wetland restoration, habitat enhancement, and upland reforestation; activities that would have a positive effect on natural and environmental resources within the project area. These improvements would also support Kawainui's function as a flood retention area. Other initiatives include supporting native Hawaiian cultural practices, allowing for a permanent presence at Kawainui, and stewardship of areas for non-commercial uses in partnership with non-profit organizations. These initiatives would increase and enhance cultural resources and practices. Improvements supporting increased public access, educational programs and opportunities, and passive outdoor recreational use would be planned and designed to minimize effects on natural and cultural resources. The EIS would address the impacts on natural and cultural resources from support facilities that are constructed, and from increased public access within the project area.

2. *Curtails the range of beneficial uses of the environment;*

The project would not curtail, but increase the range of beneficial uses of the area's environment by restoring its ecological function and character, and increasing public access for educational opportunities and passive outdoor recreation. Improvements allow for increased educational programs, and provides the public with greater opportunities to appreciate and passively utilize this area. Project improvements supporting cultural practices would also increase the beneficial use of the area and increase stewardship of these resources.

3. *Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;*

The improvements should not conflict with the State's long-term environmental goals and guidelines as expressed in Chapter 344, HRS. A discussion of the project's consistency with applicable guidelines would occur in the EIS.

4. *Substantially affects the economic welfare, social welfare and cultural practices of the community or state;*

The proposed wetland and habitat enhancements are intended to support native Hawaiian cultural practices and increase stewardship of areas in partnership with non-profit organizations. This should have a positive effect on promoting cultural practices and education. However, with the provision of new permanent structures, trails and pathways, it is likely that more people would visit the project area. Concerns have been raised by community members about the potential effects from more visitors and tourists to the

area, unwanted commercial activity, and increased vehicular traffic, all of which could affect the economic and social welfare of the community.

5. *Substantially affects public health;*

The project is not expected to substantially affect public health. Project initiatives include wetland restoration, upland reforestation, and habitat enhancement activities that would have a positive effect on natural and environmental resources within the project area. A healthy wetland would have a positive impact on the overall environment and water quality, resulting in a positive impact on public health. Other initiatives supporting native Hawaiian cultural practices, stewardship of areas, and educational programs should not affect public health. The availability of walking paths and wildlife viewing areas provide opportunities for passive recreation, improved public health (e.g. exercise), and enjoyment of the natural environment, which should have a positive impact on public health. Short-term construction-related impacts such as noise and dust would be mitigated through best management practices and would comply with applicable regulations and permit conditions.

6. *Involves substantial secondary impacts, such as population changes or effects on public facilities;*

The proposed project does not include new affordable or market residential units, visitor accommodations or commercial activities that would generate a change in resident or visitor population, and subsequent effects on public facilities. The project would not contribute to the in-migration of new residents to Kailua or the island of O‘ahu. The cultural and educational facilities proposed are intended for use primarily by local cultural organizations, community organizations, and schools, universities, etc. The educational center and park sites proposed would also be accessible to non-Hawai‘i residents. The EIS would address the effects visitors (e.g. residents and non-residents) would have on the environment.

7. *Involves a substantial degradation of environmental quality;*

The project should not result in substantial degradation to the quality of the surrounding environment. Proposed restoration activities are intended to enhance wetland and upland areas, providing improved habitat for endangered waterbirds, and support removal of invasive non-native plant species. Public access for passive enjoyment and educational programs should not result in adverse effects substantially degrading the environment. However, the EIS would assess impacts from these improvements and activities in greater detail.

8. *Individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;*

This project should not have a significant cumulative effect on the environment or involve a commitment for larger actions. The EIS would include those components of the project proposed within the study timeframe so that cumulative effects can be addressed and evaluated.

9. *Substantially affect a rare, threatened, or endangered species, or its habitat;*

Project improvements are designed to enhance the quality of the wetland habitat for threatened and endangered waterbird species, and would have a substantial positive effect on these species. Restoration activities would make habitat more suitable to support endangered wildlife populations. The EIS would assess the impact of increased public access associated with passive outdoor recreation and native Hawaiian cultural practices on these threatened and endangered species.

10. *Detrimentially affect air or water quality or ambient noise levels;*

The project should not detrimentally affect air, water quality or ambient noise. Short-term impacts would occur during various construction and ongoing maintenance activities. These impacts would be mitigated through construction best management practices and comply with applicable government regulations and permit conditions. Restoration activities would improve wetland and upland areas and have a positive effect on water quality. These impacts would be discussed further in the EIS.

11. *Affect or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;*

The project area is an environmentally sensitive area which includes the largest freshwater wetland in the state, and has been designated a Wetland of International Importance by the Ramsar Convention. Project improvements are specifically intended to enhance this environmentally sensitive wetland by removing invasive vegetation, provide erosion control through upland reforestation, and enhance wildlife habitat. The project area is not within a tsunami evacuation zone or located in a geologically hazardous area. Although large areas of the project area are within the 100-year flood plain, proposed structures are situated within upland areas outside of the flood plain and on the perimeter of the wetland. Structures are intended to support maintenance, cultural and educational activities. The EIS would address drainage and erosion control measures to minimize effects on the flood plain and wetlands.

12. *Substantially affect scenic vistas and view planes identified in County or State plans or studies;*

Project improvements should not have a significant or adverse impact on existing scenic vistas and view planes from roadways. The *Ko‘olau Poko Sustainable Communities Plan* (DPP, 2000) designates the southern and southeastern edges of Kawainui as areas offering continuous panoramic views. The project component’s impact on scenic views and view planes would be addressed in the EIS.

13. *Require substantial energy consumption*

The project is not expected to substantially increase energy demands or require upgrades to the existing electrical infrastructure. Structures planned are not expected to generate significant energy demand, and are intended to use renewable energy opportunities (photovoltaic systems) to further decrease demand.

1.2.2 Determination of Significance

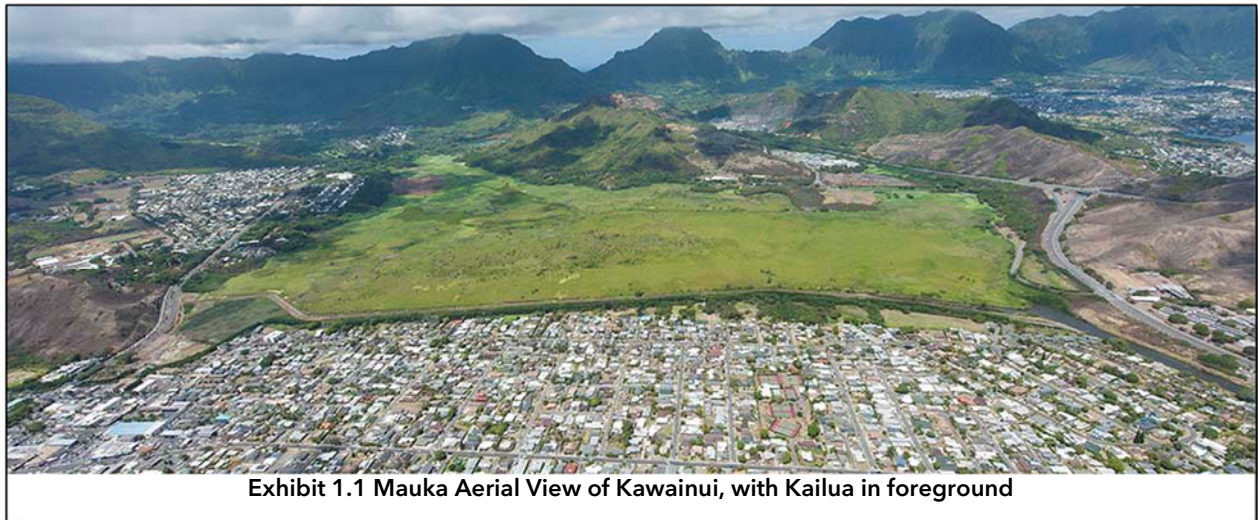
Based on an evaluation of the 13 significance criteria above, project improvements are expected to have an overall positive effect on the environment. Project proposals are specifically intended to enhance the wetland environment and wildlife habitat, support native Hawaiian cultural practices, promote educational programs and activities, and enhance passive outdoor recreation. Structures would be of small scale, blend into the environment, and be located outside of the wetland around the perimeter of the project area, minimizing effects to fragile ecosystems or wildlife habitat.

However, during the master planning process, concerns were raised by some community members about the extent, location and size of improvements and structures, and possible unintended and secondary effects of increased public access. In addition to potential impacts to the wetland ecosystem, concerns were expressed over a potential influx of visitors to the project area, and resulting potential adverse effects to the surrounding community, such as traffic congestion, overcrowding, commercialization, crime, and homelessness. Given these expressed concerns, DOFAW has determined that the project meets the Chapter 343, HRS criteria of significance, and would prepare an EIS for the project.

1.3 PROJECT LOCATION

The Kawainui-Hāmākua project area is located in the Kailua community on the windward side of the Island of O‘ahu. The project area totals 986.02 acres, and consists of three distinct geographic areas: 1) Kawainui wetlands and upland areas; 2) Hāmākua; and 3) the Pu‘uoeahu hillside overlooking Hāmākua. These three areas are shown in a project location map on Figure 1.1 and an aerial vicinity map in Figure 1.2.

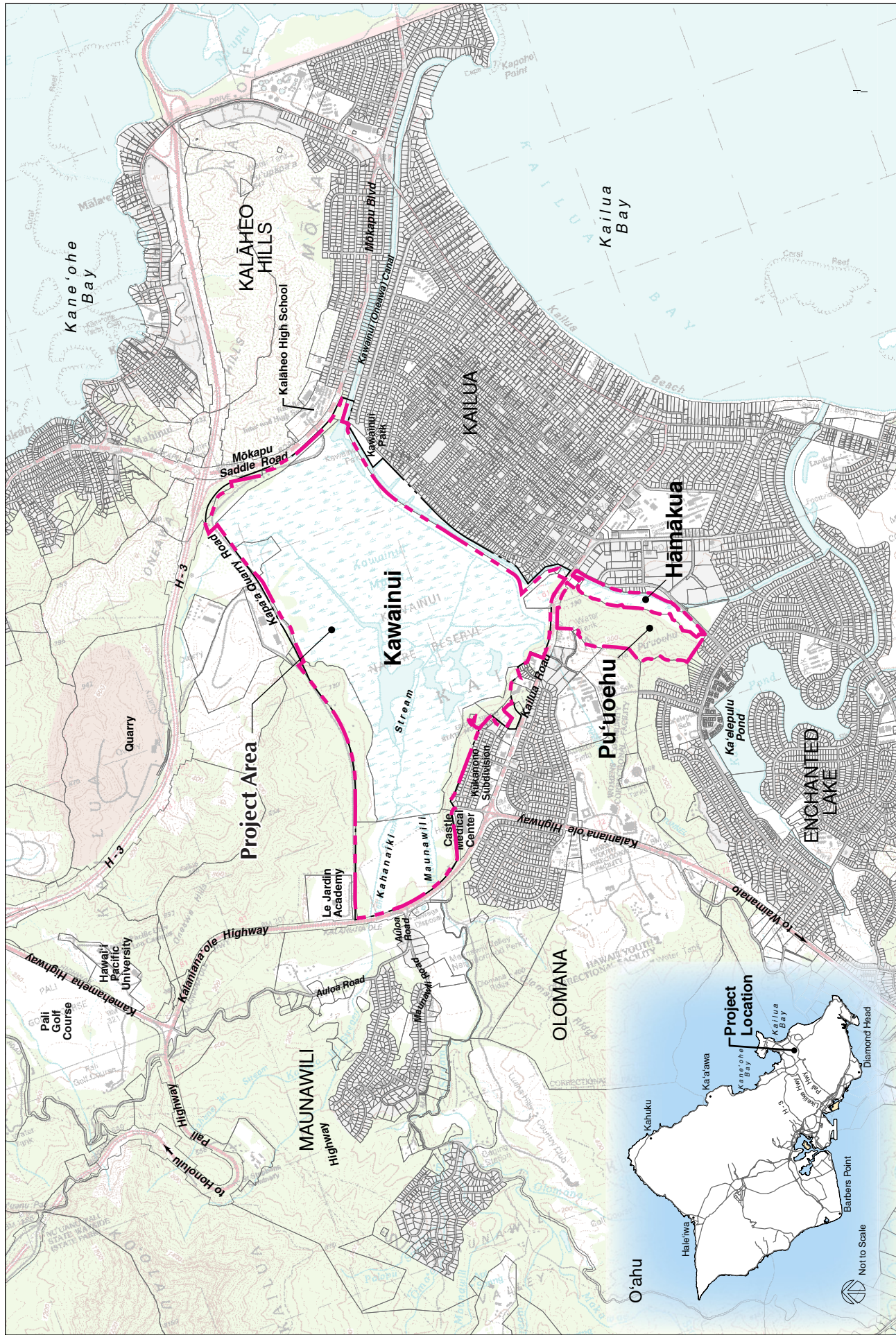
Kawainui is generally located west (mauka) of the large residential area of Kailua and east (makai) of the Maunawili subdivision area as shown on Figure 1.1 and the oblique aerial photo in Exhibit 1.1. Kawainui is bounded by Mōkapu Saddle Road and Mōkapu Boulevard to the north, Kapa‘a Quarry Road to the west, Kalaniana‘ole Highway and Kailua Road to the south, and the flood control levee to the east.



Tax Map Key

The project area consists of 12 Tax Map Key (TMK) parcels owned by the State of Hawai‘i. DOFAW manages 889.38 acres (6 parcels), which includes the Kawainui State Wildlife Sanctuary and the Hāmākua Marsh State Wildlife Sanctuary. The remaining 96.64 acres (6 parcels) are managed by DSP as the Ulupō Heiau State Historical Park (SHP) and the Kawainui State Park Reserve (SPR).

Figure 1.3 identifies these parcels by their TMK numbers and identifies them by names. Parcels under DOFAW jurisdiction are shown in blue, and those under DSP jurisdiction are shown in green. Table 1.2 provides information on these parcels, acreage, and jurisdiction.

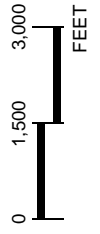


Source: State of Hawaiʻi GIS Data

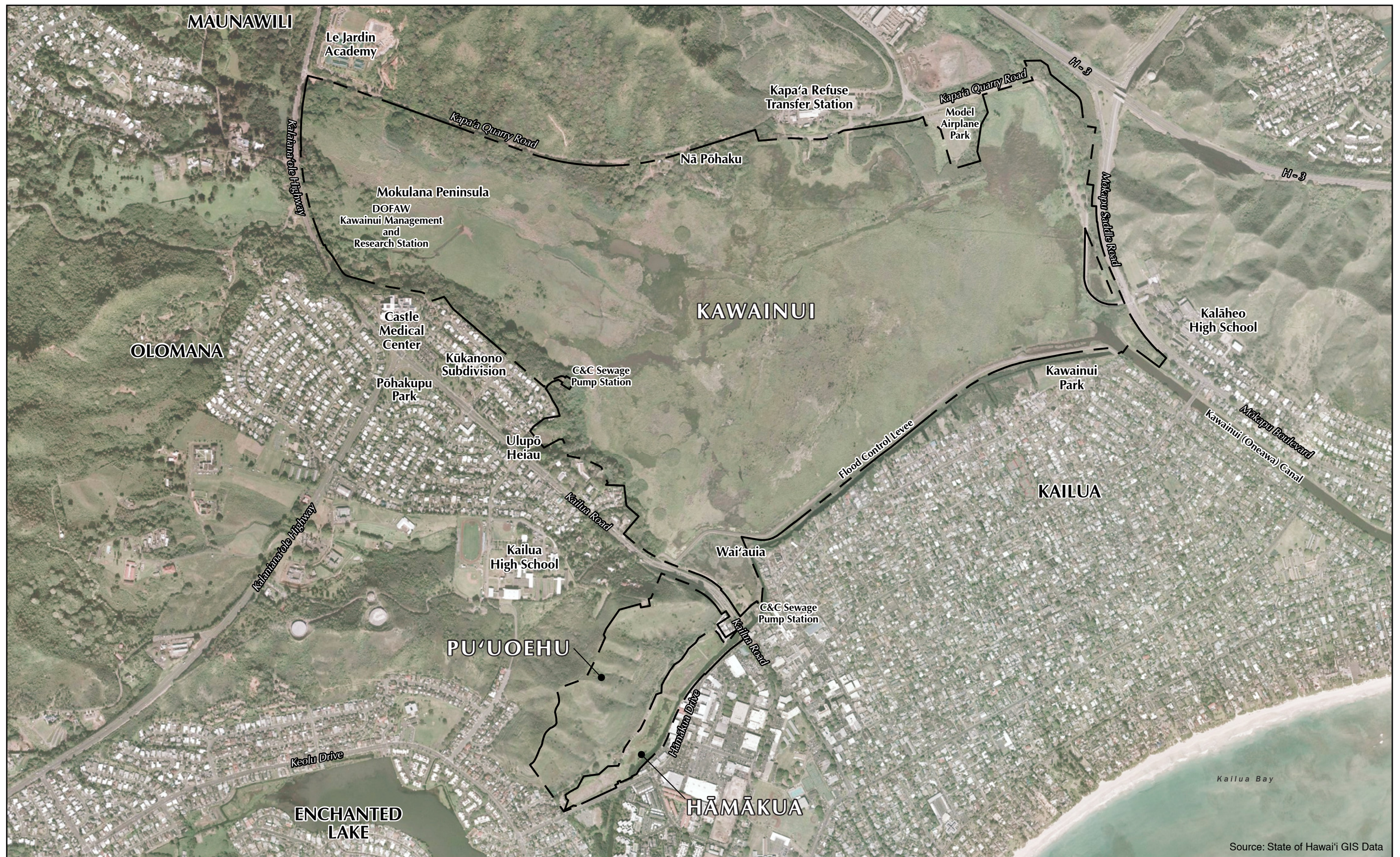
Kawaiʻui - Hāmākua Master Plan

Figure 1.1 - Project Location

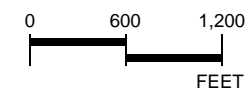
Kailua, Oʻahu



HIF PLANNERS
places for people



Kawainui - Hāmākua Master Plan
Figure 1.2 - Vicinity Map



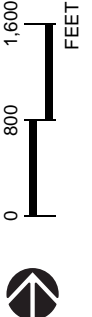


Source: State of Hawaiʻi GIS

Kawaiʻui - Hāmākua Master Plan

Figure 1.3 - TMK Map

Kailua, Oʻahu



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Table 1.2. TMK Identification of Parcels and Jurisdiction			
TMK Parcel	Description of Parcel	Acreage	Jurisdiction
4-2-003: 017	Pu'uoehu Hillside	67.18	DOFAW
4-2-003: 030	Hāmākua	22.72	DOFAW
4-2-013: 005	Kawainui – Kahanaiki	97.22	DOFAW
4-2-013: 010	Kawainui – State Park Reserve, Nā Pohaku	47.76	DSP
4-2-013: 022	Kawainui – Marsh Central	89.00	DOFAW
4-2-013: 038	Kawainui – Kūkanono	19.51	DSP
4-2-016: 002	Kawainui – Wai'auia	9.10	DOFAW
4-2-016: 015	Kawainui – Marsh Central	604.16	DOFAW
4-2-017: 020	Kawainui – State Park Reserve, Kapa'a Section	18.32	DSP
4-2-103: 018	Kawainui – Ulupō Heiau State Historical Park	2.50	DSP
4-2-103: 035	Kawainui – Ulupō Heiau	6.65	DSP
4-4-034: 025	Kawainui – State Park Reserve: Kalāheo Section	1.90	DSP
	Total Acreage	986.02	

TMK 4-2-013: 043 (Parcel 43), delineated with a red dashed line on Figure 1.3, was at one time created for the issuance of a revocable permit. However, the permit is no longer applicable and the lot was never officially subdivided. That revocable permit is no longer applicable and subdivision of that parcel is not required.

City-owned property in the vicinity, such as the Model Airplane Park on Kapa'a Quarry Road, Kawainui Neighborhood Park, and the remnant parcel between the Kapa'a Quarry Road and Mōkapu Saddle Road, are not part of the Kawainui-Hāmākua Master Plan project area.

Hāmākua is located southwest of Kailua town and Pu'uoehu hillside overlooks this marsh (Exhibit 1.2). Hāmākua is adjacent to commercial properties and Kailua Road to the north, Hāmākua Drive and commercial uses to the east, residences associated with Enchanted Lake to the south, and Pu'uoehu hillside to the west.

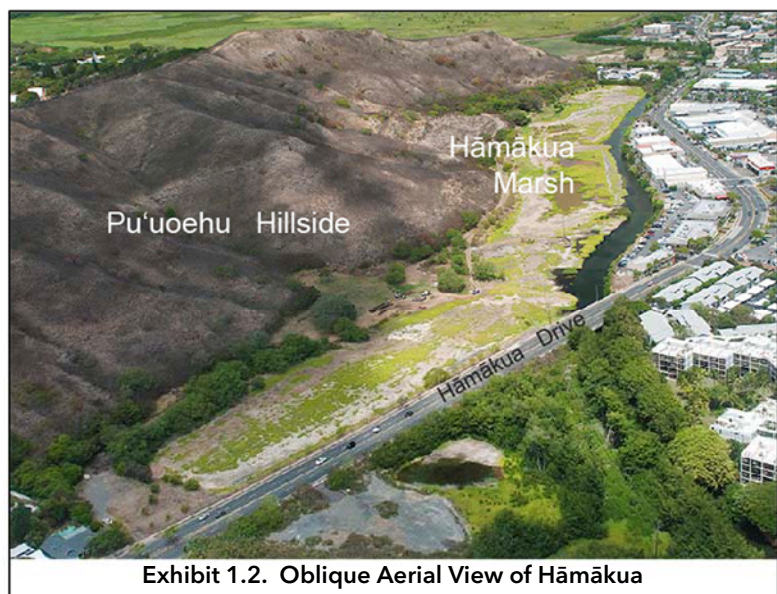


Exhibit 1.2. Oblique Aerial View of Hāmākua

1.4 GENERAL SITE CONDITIONS AND SURROUNDING USES

Kawainui's wetland and surrounding upland areas encompass over 90 percent of the total Kawainui-Hāmākua area. It extends from the Maunawili, Kūkanono and Olomana communities on the south end to Kalāheo on the north, with Kailua located makai (east) as shown on Figure 1.1. Hāmākua and Pu'uoeihu encompass a large area of open space above (mauka of) Kailua town, and the Enchanted Lake community is located to the south.

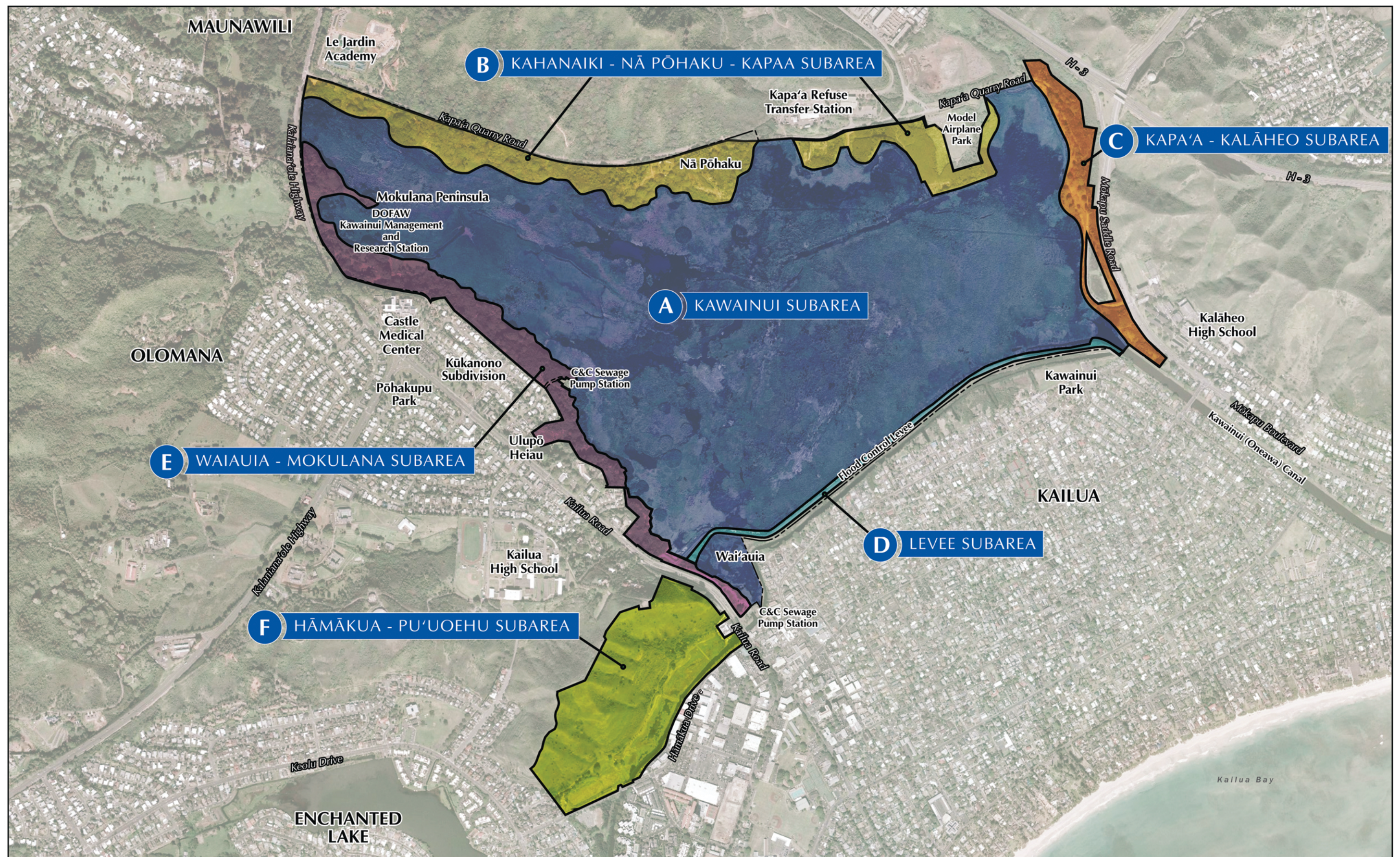
Kawainui is the State's largest remaining freshwater wetland, and serves as an important flood control basin protecting the low-lying Coconut Grove residential area and adjacent commercial properties of Kailua. The Kawainui-Hāmākua area has been recognized as a wetland of international importance due to its historical, biological and cultural significance. The wetland areas are featured in many native Hawaiian chants for the Kailua ahupua'a. The Kawainui Marsh Archaeological-Cultural-Historical Complex, which encompasses most of Kawainui, was deemed eligible for listing on the National Register of Historic Places in 1979.

The majority of wetland areas of Kawainui and Hāmākua are designated as state wildlife sanctuaries that serve as habitats for wildlife (primarily threatened and endangered waterbirds), and for research, education, conservation and management, and traditional and customary native Hawaiian practices.

The wetlands of Kawainui are surrounded by upland areas that are part of the larger Kawainui-Hāmākua project area. Along the west (mauka) side of the Kawainui subarea are various land uses along Kapa'a Quarry Road, including the Nā Pōhaku Section of the Kawainui SPR, the City's Kapa'a Refuse Transfer Station, and the City's Kawainui Model Airplane Park. Upland areas on the northern end consist of open space along Kapa'a Quarry Road that comprise the Kapa'a and Kalāheo Sections of the Kawainui SPR, with the levee forming the makai boundary of the wetland. Upland areas surrounding Kawainui to the south include the Ulupō Heiau State Historical Park, Kūkanono subdivision, DOFAW's Kawainui Management and Research Station (below Castle Medical Center), and a peninsula known as Mokulana.

Because of the size of the project area, the following discussion of site conditions and surrounding uses is divided into six geographic subareas. Figure 1.4 shows the general location of these subareas.

Subarea A:	Kawainui
Subarea B:	Kahanaiki- Nā Pōhaku -Kapa'a
Subarea C:	Kapa'a-Kalāheo
Subarea D:	Levee
Subarea E:	Wai'auia-Mokulana
Subarea F:	Hāmākua-Pu'uoeihu

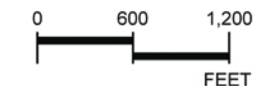


Source: State of Hawai'i GIS Data

Kawaiui - Hāmākua Master Plan

Figure 1.4 - Project Subarea Map

Kailua, O'ahu



1.4.1 Subarea A: Kawainui

The Kawainui subarea includes Kawainui's wetlands situated between the levee and Wai'auia in the southeast corner of this subarea (Exhibit 1.3). Kahanaiki and Maunawili Streams both flow into Kawainui from the southwest direction, and Kapa'a Stream flows makai into the wetland from the west. This wetland generally drains in a northern direction toward Kawainui (Oneawa) Canal, which eventually discharges into Kailua Bay.



Exhibit 1.3 Southern Aerial View of Kawainui in 2012 (Prior to Ponds Completion)

The Kawainui Marsh wetland serves as habitat for four endangered Hawaiian waterbird species along with migratory bird species. In 2013, the U.S. Department of the Army, Corps of Engineers constructed several terraced ponds, encompassing about 40 acres, at the southwestern end of Kawainui. This Kawainui Marsh Environmental Restoration Ponds Project was undertaken to improve waterbird habitat. DOFAW now manages and maintains the ponds. DOFAW has plans to begin a phased wetland restoration effort to remove invasive vegetation within a 60-acre area mauka of the ponds.

1.4.2 Subarea B: Kahanaiki-Nā Pōhaku-Kapa'a

Kahanaiki-Nā Pōhaku-Kapa'a generally encompasses the upland areas along Kapa'a Quarry Road from its intersection with Kalaniana'ole Highway north past Nā Pōhaku o Hauwahine (Nā Pōhaku) to just beyond the model airplane park, as shown in Figure 1.3. The City-owned model airplane park is not part of the project area. This upland area above the wetland is heavily vegetated, and dominated by invasive species of non-native vegetation that are gradually eliminating former native vegetation present in the area (Exhibit 1.4). DOFAW has been working on the southern end of this subarea to slowly trim trees and remove non-native vegetation. This subarea includes the Nā Pōhaku Section of Kawainui SPR.

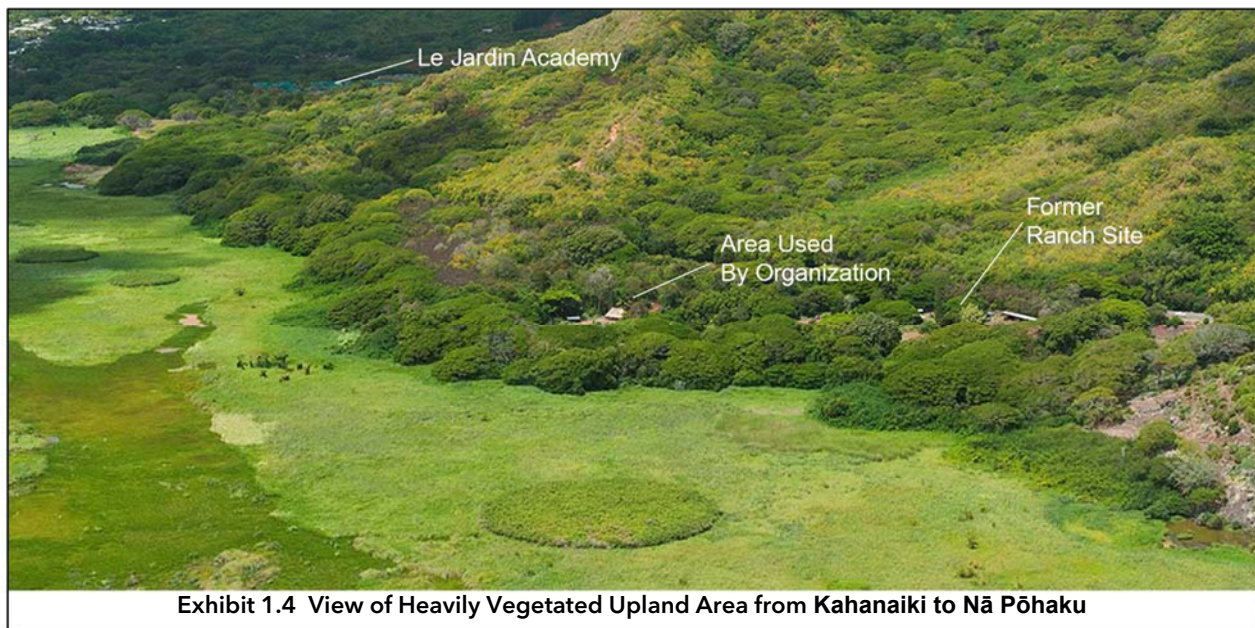


Exhibit 1.4 View of Heavily Vegetated Upland Area from Kahanaiki to Nā Pōhaku

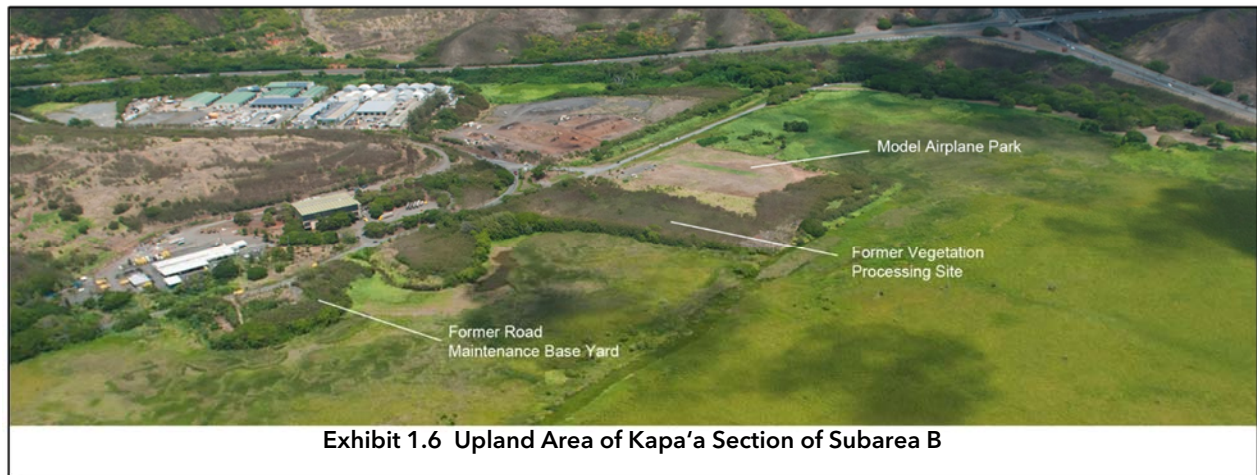
The middle section of this subarea was formerly used for ranching-related activities that have since ended, and the area has been largely cleared of structures. A portion of this former ranch site is currently being used in the short-term by the non-profit organization Ke Kahua O Kūali‘i for traditional native Hawaiian cultural practices under a permit from DSP. Nā Pōhaku o Hauwahine is a culturally significant site of approximately 12 acres located in the central portion of this subarea (Exhibit 1.5). Nā Pōhaku is a unique setting of volcanic rock formations where native plants are being planted to replace the non-native vegetation. A pedestrian trail is also provided within this area.



Exhibit 1.5 Nā Pōhaku in Subarea B

The non-profit organization ‘Ahahui Mālama I Ka Lōkahi (AML) is the curator for this sacred site and conducts restoration work at Nā Pōhaku, including planting native plants, brush removal and trail construction. AML also conducts other restoration projects and educational programs throughout Kawainui-Hāmākua under a memorandum of agreement with the BLNR. AML has conducted community service days in this area and across Kawainui with a focus on removing invasive plants and planting endemic vegetation to help maintain and restore native wetland habitat.

This subarea continues north of Nā Pōhaku along Kapa‘a Quarry Road to a site that was formerly used by the City as a road maintenance base yard (Exhibit 1.6). Another site adjacent to the airplane park was used by the City for vegetation processing as part of prior a City project removing vegetation within the wetland to improve its flood control function. The City’s model airplane park is a passive recreational park used for model aviation, and was recently improved to include restroom facilities.



Other surrounding uses in the vicinity of this subarea include the City’s Kapa‘a Transfer Station for public refuse drop-off located across (mauka) of Kapa‘a Quarry Road and the upland area formerly used by the City as a road maintenance base yard. The Kapa‘a Light Industrial Park is located mauka of the model airplane park.

1.4.3 Subarea C: Kapa‘a-Kalāheo

Linear-shaped Subarea C is roughly parallel to Mōkapu Saddle Road and forms the northern boundary of the project area. It includes an open space area outside the wetland along Kapa‘a Quarry Road that has been designated the Kapa‘a and Kalāheo Section of the Kawainui State Park Reserve. Surrounding uses include Mōkapu Saddle Road and Kalāheo High School. Residences are located adjacent to the Kalāheo Section of the park along both sides of Kawainui Canal.

With the exception of one site, upland areas generally consists of narrow strips of land (Exhibit 1.7). This area also includes some vegetated areas across (mauka) the road up to State property associated with Mōkapu Saddle Road right-of-way. A portion of the inland area where Kapa‘a Quarry Road intersects Mōkapu Boulevard consists of an undeveloped remnant parcel owned by the City, which is not included as part of this project area.



The eastern end of this subarea consists of a 1.9-acre parcel situated between Kawainui Canal and Mōkapu Boulevard (Exhibit 1.8). This site was previously planned for park use by the City in 2002 as the Kawainui Gateway Park Project, and both a CDUP permit (OA-3126B) and Special Management Area Use Permit (Resolution 02-339) were obtained for it. However, no action has since been taken to implement those plans. DSP has issued short-term special use permits (SUP) to Le Jardin Academy and the Lanikai Canoe Club in 2013 and 2014, respectively, to allow canoe and kayak launches from this site for practices. These permits expired, but a new short-term SUP was issued to the Lanikai Canoe Club in June 2016 to allow launching one-man canoes from this site. More recently, DLNR staff, with the assistance of volunteers from local canoe clubs, cleared overgrown vegetation at the site.



1.4.4 Subarea D: Levee

Subarea D encompasses the existing levee that was initially built in 1966 as the Kawainui Marsh Flood Control Project. The levee separates Kawainui and Hāmākua for flood control purposes, channeling Kawainui's waters toward the ocean via the Kawainui Canal that runs parallel to Mōkapu Boulevard. Kawainui Stream runs along the makai side of the levee (City-owned property), and conveys runoff from the Coconut Grove residential area to Hāmākua that eventually flows into Ka'elepulu Stream (Exhibit 1.9).



Exhibit 1.9 Subarea D is the 1.3-Mile Levee

In 1997, the levee's height was raised 4 feet, and a 4-foot high concrete floodwall was added on the levee. This was done to prevent overtopping, which occurred during a January 1988 storm, causing flooding in the lower lying residential area of Coconut Grove on the makai side of the levee.

The approximately 1.3-mile levee is used daily as

a pedestrian and bicycle path by the public, although it wasn't specifically designed to serve this function.

1.4.5 Subarea E: Wai'auia-Mokulana

Subarea E generally includes the upland area along the southern and eastern boundaries of Kawainui. It extends from Wai'auia southwest, past Ulupō Heiau SHP along Kailua Road, past DOFAW's management research station (behind Castle Medical Center), and up to the Mokulana peninsula along Kalaniana'ole Highway.



Exhibit 1.10 Wai'auia Site on Kailua Road Near the Levee

Wai'auia is situated at the eastern end of Kawainui and is bordered by the levee to the northwest, Kawainui Stream and a City sewage pump station to the north, and Kailua Road to the southeast as shown on Figure 1.3. The majority of Wai'auia consists of wetland, however, there is generally a strip of upland area (about 1.0 acre) along Kailua Road as shown on Exhibit 1.10. This upland area consists of open space in the northeastern corner that is used by DOFAW for vehicular access and parking as part of wetland maintenance activities in this area. From this

area, a strip of land runs mauka toward the levee along Kailua Road. At Wai‘auia, surrounding land uses to the north include residences and low-rise condominiums across Kawainui Stream, and some commercial uses along Kainehe Street.

Ulupō Heiau SHP is situated about 0.5 miles mauka of the levee (Exhibit 1.11). This 28.7-acre site is under the jurisdiction of the Division of State Parks. The site is culturally significant and important for the perpetuation and practice of Hawaiian culture. Under a co-curatorship agreement between DSP and the Kailua Hawaiian Civic Club (KHCC) and AML, these cultural organizations assist with the care, restoration, and interpretation of the site. They have initiated restoration of the cultural landscape with the re-establishment of lo‘i kalo and replanting the area with native plants.

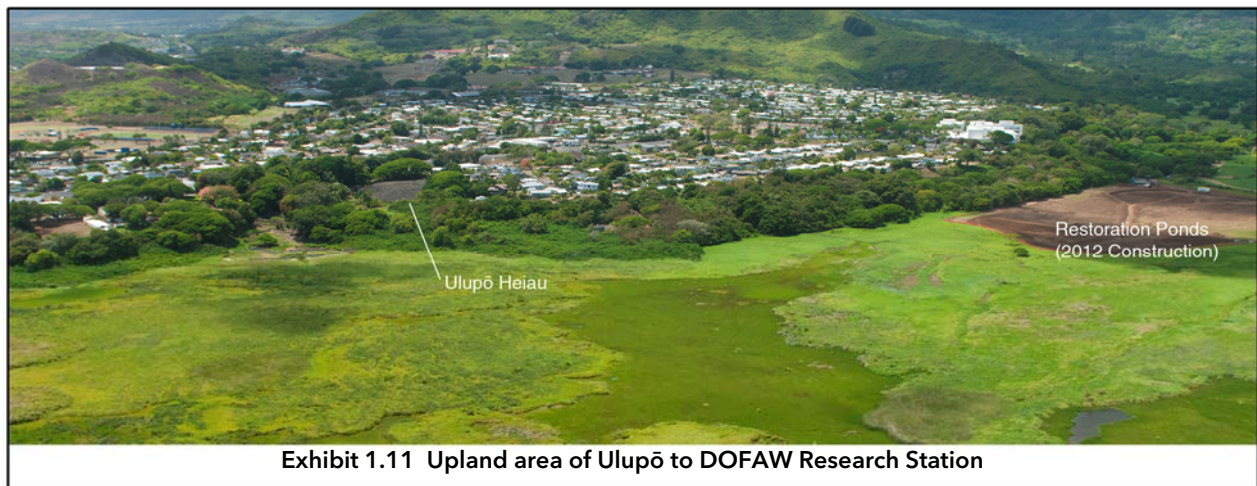


Exhibit 1.11 Upland area of Ulupō to DOFAW Research Station

The slope along the eastern side of Kawainui is relatively steep with exposed rock outcrops and dense vegetation growth. Adjacent to the State property along Kailua Road are several churches, the Windward YMCA, and the residential subdivisions referred to as Kawainui Vista and Kūkanono. The City’s sewer pump station to the west of Ulupō Heiau is excluded from the project area.

DOFAW’s Kawainui Management and Research Station is located behind Castle Medical Center at the end of Ulukahiki Street, and serves as DOFAW’s operational headquarters for management, restoration and maintenance activities occurring at Kawainui (Exhibit 1.12). This includes management and maintenance of the restoration ponds recently completed fronting this research station. Facilities serving this management and research station presently consist predominantly of temporary structures such as office trailers and shipping containers. The Mokulana peninsula is located west of this station and restoration ponds. As shown in the oblique aerial photo, this densely vegetated promontory is located across of Aulua Road and overlooks the restoration ponds and wetlands.

1.4.6 Subarea F: Hāmākua and Pu‘uoeahu

Subarea F includes the State designated wildlife sanctuary of Hāmākua and the fairly recently acquired (2013) eastern (makai) half of the Pu‘uoeahu hillside up to the ridge line located above (mauka) Hāmākua. The mauka half of the hillside is outside of the project area, and owned by both the State and private landowners.

DOFAW has been conducting wetland restoration activities at Hāmākua since 2001 which includes removing invasive vegetation from marsh banks, managing open water, predator control, and planting native vegetation to improve habitat for endangered waterbird species. Pu‘uoeahu is a hillside covered predominantly with non-native vegetation and trees (Exhibit 1.13).



Exhibit 1.12 DOFAW Research Station, Mokulana Peninsula, and Restoration Ponds (2012 Construction)



Exhibit 1.13 View of Hāmākua and Pu‘uoeahu Hillside

Adjacent to Hāmākua and Kawainui Stream are commercial businesses along a strip bounded by Hāmākua Drive. Across from this are more commercial uses associated with Kailua town along with multi-family residential developments. The southern end of the Hāmākua wetland abuts single-family residences of the Enchanted Lake community.

1.5 OTHER BACKGROUND INFORMATION

The project area is subject to additional considerations due to its designation as a wetland of international importance and designation as a State wildlife sanctuary. In addition, land areas that were purchased with the use of certain federal funds must be dedicated to public recreation use. These additional policy considerations are discussed below.

1.5.1 Ramsar Convention

In 2005, Kawainui-Hāmākua was designated a Wetland of International Importance by the Ramsar Convention, raising its visibility as a significant natural and cultural resource. The Ramsar Convention is an intergovernmental environmental treaty that was adopted in the Iranian city of Ramsar in 1971, and focused on wetlands as a particular ecosystem.

The Ramsar Convention's mission is for the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world. At the center of the Ramsar philosophy is the "wise use" concept, which is defined as "the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development" (Ramsar, 2014). The Ramsar Convention also places importance on the identification of cultural elements of wetlands, or the cultural elements of the landscape in which they are found (Gland, 2008).

In 2005, DOFAW, in conjunction with several other organizations, nominated Kawainui-Hāmākua as a Wetland of International Importance to the Ramsar Convention. The nomination stated that this complex is sacred to Hawaiians, and functioned as Hawai'i's largest ancient freshwater fishpond. Kawainui is the largest remaining emergent wetland in Hawai'i. It provides primary habitat for four of Hawai'i's endemic and endangered waterbirds, and contains archaeological and cultural resources, including ancient walled taro water gardens (lo'i) where fish were also cultivated. Kawainui stores surface water, providing flood protection for adjacent Kailua town. Hāmākua is a smaller wetland historically connected to and immediately downstream of Kawainui, and also provides significant habitat for several of Hawaii's endemic and endangered waterbirds (HHF, 2014).

In keeping with the Ramsar mission and philosophy, DOFAW is working toward providing more opportunities for the public to access the Kawainui State Wildlife Sanctuary with trails and wildlife viewing areas.

1.5.2 State of Hawai‘i Wildlife Sanctuary

Hāmākua and much of Kawainui are designated as state wildlife sanctuaries, regulated under Title 13, Chapter 126, HAR (State of Hawai‘i, 2010). The purpose of a state wildlife sanctuary is to conserve, manage and protect indigenous wildlife and their habitats in sanctuaries. The Pu‘uoeahu hillside is not part of the wildlife sanctuary, but serves as the main watershed for the Hāmākua Marsh State Wildlife Sanctuary.

Designation as a state wildlife sanctuary imposes controls on entry and the types of uses allowed. Public access within state wildlife sanctuaries is restricted to marked trails and roads, and no motorized public vehicles are allowed. Within Kawainui, access is “restricted to the perimeter marked trails and roads, or other marked trails or roads.” Within Hāmākua, access is “prohibited in wetland areas bounded by the perimeter fence and Makai canal.” According to state regulations, commercial activities may be permitted within the Kawainui and Hāmākua, though at a limit of 100 visitors per day (Chapter 126, HAR).

Currently, there are no marked trails or roads designated for public use within the Kawainui and Hāmākua sanctuary areas. Access is restricted to DOFAW employees for management and maintenance operations, and contractors hired by DOFAW or others authorized by DOFAW to support management activities. DOFAW has authorized limited access to the non-profit organization ‘Ahahui Mālama I Ka Lōkahi (AML) to conduct restoration and educational activities within Kawainui.

1.5.3 Land and Water Conservation Fund Program

The Land and Water Conservation Fund (LWCF) Act of 1965 was enacted by Congress to assist in preserving, developing, and assuring accessibility to outdoor recreation resources for America’s citizens and visitors. The federal grants program, administered by the Department of the Interior, National Park Service, provides funding assistance to state and local governments for the acquisition of land for public recreation and the development and/or renovation of outdoor recreational facilities. The LWCF program is administered on the State level by DLNR, Division of State Parks. Once LWCF funds are used, the property is protected for public outdoor recreation in perpetuity under Section 6(f) of the LWCF Act.

In the 1980s, five parcels totaling 173.64 acres at Kawainui were acquired by the State using matching LWCF funds. Initially, all these parcels were placed under the jurisdiction of DSP for outdoor recreation purposes. However, 97.22 acres at the mauka end of Kawainui (TMK: 4-2-013:005) were transferred to DOFAW in 2007 to be incorporated within the Kawainui State Wildlife Sanctuary.

Currently, public access and passive outdoor recreation are available at the Nā Pōhaku o Hauwahine site and Ulupō Heiau where trails, viewing areas, and interpretive signs are provided. The project proposes to increase public access and passive outdoor recreational opportunities to other areas included under Section 6(f) in compliance with the LWCF program requirements.

The following are the LWCF requirements for this 173.64 acres of “Section 6(f)” land.

1. The property must be maintained for public outdoor recreational use in perpetuity.
2. The property must be kept reasonably open, accessible, and safe for public use. Hours and times of public use must be reasonable according to area and type of facility.
3. The property shall be maintained so as to appear attractive and inviting to the public.
4. Limitations may be imposed on the numbers of people using an area as necessary for maintenance and preservation, or the type of users, such as “hikers only.”
5. No exclusive use, discrimination on the basis of residence, or required memberships are allowed.
6. Sanitary facilities, buildings, roads, trails, and other structures must be maintained in good repair and to health standards. Property should be attractive and inviting.

CHAPTER 2: PROJECT DESCRIPTION AND ALTERNATIVES



The Kawainui-Hāmākua Master Plan Project was initiated to provide the State DLNR, DOFAW and DSP with a master plan to serve as a guide for programming and implementing future improvements needed within the Kawainui-Hāmākua project area. Proposed improvements are needed to support DOFAW and DSP's efforts in achieving their agency missions, to sustain and enhance the natural and cultural resources associated with this area, and increase public access and outdoor recreational opportunities.

2.1 PROJECT NEED AND OBJECTIVES

As Hawai'i's largest freshwater wetland, a wetland of international importance, a State wildlife sanctuary, and a place with historic and cultural significance, Kawainui-Hāmākua is a public resource that must be managed with care for current and future generations. The long-term management of this resource has been entrusted to DOFAW and DSP. As the designated caretakers, these agencies are tasked with sustaining and enhancing the area's natural and cultural resources and providing opportunities for public access and use, as well as complying with applicable statutory and regulatory requirements.

In order to effectively manage, obtain funding, and implement needed improvements in the project area, a current master plan is needed. A master plan embodies a shared long-term vision, and provides specific recommendations and proposals for DOFAW and DSP to implement. The concepts and recommendations of the master plan support the "wise use" concepts central to a Ramsar Convention Wetland of International Importance. They ensure that management actions are consistent with state and federal regulations governing a State wildlife sanctuary, wetlands, and the Section 6(f) mandate to provide opportunities for public outdoor recreation.

2.1.1 Background on Previous Planning Efforts

The current master plan update was needed to provide a current and relevant document which reflects present conditions and public priorities. Over the years, other plans have been developed for select areas within the Kawainui-Hāmākua project area. Various recommendations have been partially implemented, although most of the previous plans and proposals were never implemented.

The most recent comprehensive plan for the project area was completed by the DLNR in 1994. The *Kawai Nui Marsh Master Plan, Report R-100* (WOC, 1994) was an outgrowth of a 1983 DLNR resource management plan, and envisioned as a 20-year plan. Recommendations in the 1994 plan included waterbird enhancement areas, a visitor center, a cultural park at Ulupō Heiau,

ethnobotanical gardens, recreational parks at Kalāheo, Mokulana, and Wai‘auia (the former ITT site), and a pedestrian pathway around the perimeter of Kawainui. Although some of those recommendations may still be applicable, that plan is now over 20 years old. Many changes have occurred to the area’s physical characteristics, agency jurisdiction and objectives for this area, and community priorities for the area, suggesting a need to revisit the plan to address current needs and objectives.

Several of the conditions that have changed since the 1994 plan include:

1. Transfer of ownership for large areas of Kawainui from the City and County of Honolulu to the State of Hawai‘i.
2. Transfer of 97.22 acres at the mauka end of Kawainui (TMK: 4-2-013:005) from DSP to DOFAW jurisdiction in 2007 for inclusion within the Kawainui State Wildlife Sanctuary.
3. State acquisition of the Pu‘uoehu hillside in 2013.
4. Designation of Kawainui-Hāmākua as a Wetland of International Importance by the Ramsar Convention.
5. Discontinuation of ranching operations on approximately 100 acres within the project area.
6. Construction completion of 40 acres of habitat restoration ponds by the U.S. Army Corps of Engineers in 2015.
7. Increased need for wetland and upland restoration and habitat enhancement.
8. Increased recognition of the area’s historic role in native Hawaiian culture for over 700 years, which included active use as the largest freshwater fishpond on O‘ahu and the presence of extensive taro cultivation and habitation.
9. Recognition of the need to provide opportunities for native Hawaiian cultural practices and stewardship for organizations along with allowing for a permanent presence at Kawainui.
10. Recognition of the need for increasing managed public access and outdoor recreational opportunities at Kawainui.
11. Increase in educational programming being conducted at Kawainui-Hāmākua along with growing public awareness of the need for successful long-term management.

2.1.2 Need for Project

The need for improvements at Kawainui-Hāmākua are based upon the following primary issues:

1. Restoration Efforts and Habitat Enhancement. The vast majority of the project area includes wetland areas that need restoration to enhance habitat for endangered waterbird species which is one of DOFAW's main priority. Upland reforestation is also needed to address erosion and invasive vegetation.
2. Integrate Cultural Practices Within Kawainui. Kawainui is culturally significant and important to native Hawaiians, and protecting and managing cultural resources are core objectives for both DOFAW and DSP. Providing an opportunity to establish a permanent cultural presence to support cultural practices, stewardship, and educational opportunities is thus needed.
3. Increase Public Access and Passive Outdoor Recreational Use. Increasing public access and allowing some passive outdoor recreational use is needed to comply with agency missions and regulatory requirements. Increased public access also supports educational and stewardship opportunities needed to manage this resource.
4. Increase Educational and Stewardship Opportunities. Increased educational and stewardship opportunities are also needed to support DOFAW and DSP mission objectives, restoration activities, cultural practices, and managed public access.
5. Effective Management of Resource with Increased Access. Effective management of the resources is a priority for DOFAW and DSP to minimize potential impacts to the resource by increased access. Management of this resource also needs to consider the broader public interest.

2.1.2.1 Restoration, Reforestation and Stewardship

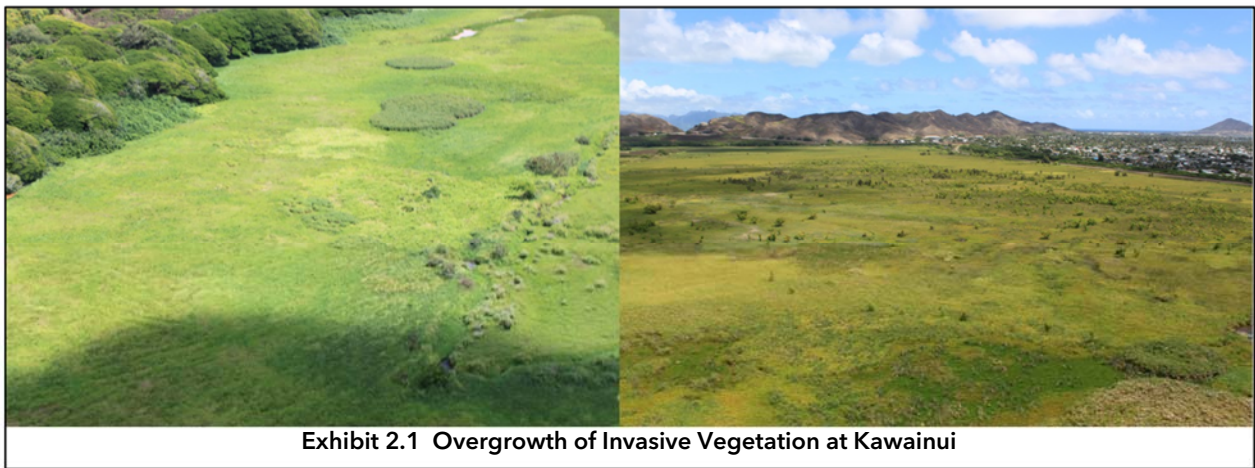
Throughout the project area, there is a need for environmental stewardship in the form of wetland restoration, habitat enhancement, erosion control and upland reforestation. There is also a need to support DOFAW management and maintenance activities and facilities.

Kawainui. Although this wetland provides important habitat for endangered endemic waterbirds, migratory shorebirds and waterfowl, these functions have been threatened by the overgrowth of alien (non-native) and invasive vegetation. DOFAW took over management of most areas of Kawainui in 2009 after acquiring 693 acres of it from the City. Challenges with its management and maintenance the previous decades have resulted in current conditions that need to be addressed through wetland restoration and upland reforestation.

Invasive vegetation growth in the wetland has led to the accumulation of a floating peat mat layer (partially decomposed plant matter saturated with anoxic water) that has further reduced open waters (Exhibit 2.1). These conditions are also impacting the function and value of Kawainui, diminishing its ability to retain floodwaters. Other factors contributing to the present

condition include erosion of upland areas around Kawainui, and challenges with predator control. The dominance of non-native invasive species has led to the loss of native vegetation and wetland habitat. Loss of wetland habitat is a primary cause for the decline of Hawaiian waterbirds and other avian and aquatic life.

The U.S. Fish and Wildlife Service (USFWS) has identified Kawainui as a primary habitat for the recovery of Hawai‘i’s endangered waterbird species. The latest draft of the USFWS *Recovery Plan for Hawaiian Waterbirds* cites a need to expand open water areas at Kawainui that are used as habitat. It also recommends the implementation of management plans, management of water sources, and the reduction and monitoring of predator populations.



As the largest remaining freshwater wetland in the State of Hawai‘i, Kawainui provides an important flood control function by serving as a flood basin, slowing down surface runoff and protecting low-lying urbanized areas of Kailua. Kawainui protects the water quality of Kailua Bay by serving as a nutrient and sediment sink, filtering and mitigating the effects of nutrients and chemicals discharged from upland areas. These critical flood control and water quality functions are also jeopardized by the overgrowth of invasive vegetation as shown on Exhibit 2.1.

Improvements are needed to address stormwater runoff and erosion control for upland areas. Surface water runoff from the Maunawili and Olomana communities enter primarily from Kahanaiki and Maunawili Streams. Runoff from the surrounding highways and roadways also sheet flow into various drainage system culverts that eventually discharge into these two streams, Kapa‘a Stream, or directly into Kawainui. Therefore, there is a need to restore this resource so that agricultural and urban contaminants (e.g. fertilizers, herbicides, pesticide, etc.) can be better filtered within the wetland. Storm water runoff from Kapa‘a Quarry Road at culvert locations along this roadway also need repair or improvements to address some erosion occurring within upland areas of Kawainui.

Hāmākua. Hāmākua has been managed by DOFAW since 1995, and a restoration project was implemented in 2001. However, improvements are needed to support DOFAW's ongoing management and maintenance of this wetland and surrounding areas, which includes monitoring waterbird nesting activities (Exhibit 2.2). Creating additional wetland and open water areas are needed to support these efforts and increase nesting habitat for endangered waterbirds.

Pu'uoeahu. Pu'uoeahu serves as the watershed for Hāmākua, and this hillside is similarly overgrown with invasive non-native vegetation (Exhibit 2.3). Upland reforestation is needed at Pu'uoeahu to gradually replace non-native vegetation and trees with native vegetation and retain this hillside's function as a watershed.

Support for DOFAW Management Activities.

Additional improvements are needed to support DOFAW's ongoing management and maintenance operations within Kawainui-Hāmākua. DOFAW has taken over management and maintenance of the restoration ponds constructed by the COE (Exhibit 2.4), and is implementing wetland restoration and upland reforestation within areas mauka of these ponds. Improvements are needed to DOFAW's management and research station located behind Castle Medical Center to provide permanent facilities to properly store and secure equipment and vehicles. Office space is needed for staff to conduct research and administrative activities. Improvements to this facility are also needed to support educational programs and activities. Improved access within upland areas of Kawainui and Hāmākua is also important in order to more effectively



Exhibit 2.2 Photo of Hāmākua Wetland Areas



Exhibit 2.3 Photo of Pu'uoeahu Hillside Dominated with Non-Native Vegetation Growth



Exhibit 2.4 Photo of Restoration Pond at Kawainui

conduct maintenance activities. Additional methods of predator control (e.g. fencing) are needed to support endangered waterbird habitat supplementing DOFAW's existing predator control program.

2.1.2.2 Hawaiian Cultural Presence and Stewardship

Kawainui-Hāmākua is recognized as an important center of pre- and post-contact Hawaiian activities and as an important repository of cultural tradition and history. Consequently, there is a need to support native Hawaiian cultural practices, increase educational opportunities, and facilitate stewardship of natural resources by cultural practitioners and organizations by establishing a permanent native Hawaiian cultural presence.

A prominent cultural feature within the project area is Ulupō Heiau, one of three major heiau associated with Kawainui. The other two heiau, Pahukini and Holomakani, are located on the slopes of Ulumawao on the western side of Kawainui. The unique presence of having three heiau in the area reflects the cultural importance of Kawainui. Legends speak of the great abundance offered by the fishpond, illustrating why several chiefs, including Kākūhihewa and Kualī'i, chose to reside nearby. Historic artifacts found in the vicinity of Kawainui support the mo'olelo (stories) attesting to Hawaiian stewardship of the resource.

Many stakeholders and community members who participated in the master plan process expressed a desire to establish a permanent Hawaiian cultural presence at Kawainui and expand stewardship activities. Stakeholders envision places where the Hawaiian community can sustain their culture through traditional practices and stewardship activities, as well as having permanent facilities to support dedicated study, practice, and promotion of Hawaiian culture. The concept of combining cultural practice with resource stewardship is consistent with DOFAW and DSP agency missions to manage and protect cultural resources.

2.1.2.3 Public Access for Outdoor Recreation and Educational Opportunities

There is a need to increase public access within Kawainui-Hāmākua to provide passive outdoor recreation, and support educational programs and related activities. The project area offers unique teaching and hands-on learning opportunities for Hawai'i's students, educators, and families. DOFAW and DSP receive frequent requests from schools and community organizations for educational and research activities within Kawainui and Hāmākua. Active involvement with a variety of community organizations, schools, and government agencies is necessary to promote the long-term management of this resource. This involvement fosters a sense of ownership and stewardship through participation in restoration and maintenance activities, as well as research and educational programming.

Under LWCF Section 6(f) requirements, the 173 acres of land at Kawainui acquired with these funds must provide some type of public outdoor recreation, with reasonably open, accessible, and safe access. At present, public access and limited passive outdoor recreation are provided at

Nā Pōhaku o Hauwahine and at Ulupō Heiau SHP. At Nā Pōhaku, the public can walk the trails to experience wildlife viewing and the results of native lowland reforestation efforts being conducted by AML and volunteers.

Increasing managed public access and providing outdoor recreational activities within Kawainui is needed to comply with Section 6(f) requirements, and this effort is also consistent with State DOFAW and DSP agency objectives (public interest). Managed access is needed to support public awareness of the importance of this resource, educational programs, its function, and the need for management and continued research. At Kawainui, there are minimal facility and infrastructure improvements to support this. Therefore, improvements needed include restroom facilities, shelters (e.g. protection for students from sun and rain), parking areas, and pedestrian paths and trails.

At Hāmākua, improvements supporting research and educational programming is needed. There is no LWCF requirement for public access or passive outdoor recreation. However, limited facilities and infrastructure improvements are needed to support DOFAW management activities, research, and educational programs. These improvements would also support periodic events allowing limited public access to further expand educational programs and increase community awareness and stewardship of this resource.

Pu‘uoeahu would continue serving as a watershed for Hāmākua. Access on this hillside (maintenance trails) is needed to support DOFAW reforestation efforts along with periodic educational programs and research efforts.

2.1.3 Project Objectives

The State DOFAW, in cooperation with DSP, initiated a planning process to develop a current master plan that identifies the various improvements needed to address the many issues associated with Kawainui-Hāmākua previously discussed. This process involved evaluating and considering information from prior planning studies, assessing current site conditions in relation to agency mission objectives, and obtaining public input to develop conceptual improvements documented in the master plan. The project objectives fall into the following four broad categories, and are addressed on the following graphic.

- Agency roles and responsibilities;
- Environmental preservation and stewardship;
- Hawaiian cultural presence and stewardship; and
- Public access for outdoor recreation and educational opportunities.

PROJECT OBJECTIVES

FULFILL AGENCY ROLES AND RESPONSIBILITIES

- DLNR's overall mission is to manage State lands for current and future generations
 - DOFAW focuses on managing wetlands
 - DSP focuses on natural and cultural sites and passive recreation
- Section 6(f) requirement to maintain public outdoor recreational use in perpetuity
- Ramsar Convention "wise use" guidance, including integration of cultural heritage with wetland management
- State Wildlife Sanctuary

PROMOTE ENVIRONMENTAL PRESERVATION AND STEWARDSHIP

- Restore, manage and maintain wetlands
- Improve habitat to support recovery of endangered waterbirds
- Restore ecological function as sedimentation and flood control basin
- Improve upland areas by reducing invasive vegetation, erosion control, and reforestation with native species

PROMOTE HAWAIIAN CULTURAL PRESENCE AND STEWARDSHIP

- Recognize Kawainui's cultural and historical significance
- Maintain and enhance existing cultural features (Ulupō Heiau, Nā Pōhaku)
- Establish a native Hawaiian cultural presence
- Integrate indigenous cultural practices, education and resource stewardship

PROVIDE PUBLIC ACCESS, OUTDOOR RECREATION AND EDUCATION

- Create opportunities for public enjoyment of natural and cultural resources
- Provide paths and trails to keep visitors safe and minimize impact to the resource
- Create "outdoor classroom" for hands-on learning
- Foster sense of ownership and stewardship through participation in restoration, maintenance and research

2.2 PROJECT DESCRIPTION

The *Draft Kawainui-Hāmākua Complex Master Plan* (HHF, 2014), published for public review in May 2014, followed a planning process that involved information gathering, assessments, community input, and evaluation. The plan serves as both a resources management plan and a guide to fund and implement future improvements to the project area. Recommendations and concepts developed would facilitate resources management and identify improvements needed to meet DOFAW and DSP project objectives and agency missions.

Implementation would involve a more detailed site specific design phase for individual projects initiated along with obtaining ministerial permits (e.g. grading permit). An electronic copy (pdf file format) of this draft master plan report can be found on the project's website located at the following.

<http://www.hhf.com/kawainui>

Modifications Since the Draft Master Plan Publication

Since publication of the draft master plan report in May 2014, many public and agency review comments were received. The comments were reviewed and evaluated by DOFAW and DSP, and some modifications to the plan recommendations were made. For example, some proposals were eliminated, others modified, and others are being recommended for postponement, with possible reconsideration by DOFAW and DSP in the future. Those concepts not included in this environmental review process would need to complete a separate environmental review process if reconsidered for implementation in the future.

A summary of the modifications to proposed improvements from the draft master plan is provided. The forthcoming EIS would address those project improvements proposed for implementation within the 15-year study timeframe.

1. Kahanaiki to Nā Pōhaku-Kapa'a Subarea
 - a. Eliminated maintenance access road/path across wetland and Kahanaiki Stream that was intended to support DOFAW vehicular access between the Kahanaiki area and their management and research station.
 - b. Eliminated boat launch ramp at vegetation processing area. Boat ramp was initially planned to support the transportation of removed vegetation for processing as part of wetland restoration activities.
 - c. Support facilities planned at vegetation processing site would be consolidated closer to the entrance.
 - d. Incorporated the kauhale concept into the Educational Center complex with the addition of six traditional pole and thatch Hawaiian structures, Hawaiian games area, and gardens of native and Polynesian-introduced plants. This provides an interpretive element for park visitors to learn about pre-contact settlement and subsistence along the edges of Kawainui. This also expands upon the existing

- cultural use of the site and makes it integral to educational goals serving as outdoor classrooms.
2. Kapa‘a to Kalāheo Subarea
 - a. The section of the pedestrian path planned from the City’s Model Airplane Park northeast up to the Kawainui State Park Reserve, Kalāheo Section park site (former Gateway Park site) is designated for implementation as a future phase, yet to be determined. If this pedestrian path section is desired for implementation sometime in the future, a separate environmental review would be conducted for that.
 - b. Eliminated pedestrian bridge across Kawainui Canal from Kawainui State Park Reserve, Kalāheo Section park site to levee due to public safety concerns.
 3. Wai‘auia to Mokulana Subarea
 - a. Relocated the location of a proposed hālau at the Ulupō Heiau SHP site further northwest and away from an existing residence.
 - b. Eliminated a proposed rest room along with parking lot and access road improvements (from Kailua Road) currently serving the Ulupō Heiau SHP site. This area initially planned for improvements is privately-owned by the Kailua YMCA. If DSP acquires some property in this area in the future, separate plans would be developed along with an environmental review conducted by DSP.
 - c. Eliminated two observational decks along a section of the pedestrian path extending from the Ulupō Heiau SHP southwest to DOFAW’s management and research station.
 4. Hāmākua and Pu‘uoeahu Subarea
 - a. Designated pedestrian trails at Pu‘uoeahu strictly for DOFAW-authorized management and program activities only, and not for general public use.
 - b. Eliminated trailhead along Pu‘uoeahu that was connecting to Kailua Road.

Overview of Master Plan Components

An overview of master plan concepts and improvements proposed under this EIS is illustrated in Figure 2.1. Project improvements in each of the subareas are shown in greater detail later. The majority of the improvements are associated with natural resource management activities, such as wetland restoration, habitat enhancement and upland reforestation. Other project improvements are intended to support cultural, educational and recreational areas. Table 2.1 below presents a breakdown of the total acreage proposed for resource management and program activities.

As shown in the table, over 93 percent of the project area would be limited to resource management activities. The remaining 7 percent or about 66 acres are proposed for “program activities,” such as use by DOFAW for operations (management and research station), an education center for visitors, areas for conducting cultural practices, passive outdoor recreational activities, and support facilities (e.g. parking, rest rooms, shelters).

Kawainui - Hāmākua Master Plan
Figure 2.1 - Master Plan Overview

Table 2.1 Acreage Designated for Resource Management and Program Areas		
General Description of Area	Acreage	Jurisdiction
Natural Resource Management Areas		
Wetland Restoration - Kawainui (Includes Levee)	741.6	DOFAW
Kawainui Upland Reforestation & Open Space (Includes Areas for Trails)	88.5	DOFAW/DSP
Hāmākua Marsh State Wildlife Sanctuary	22.7	DOFAW
Pu'uoehu	67.2	DOFAW
<i>Management Area Acreage</i>	920.0	93%
Cultural, Educational and Other Program Areas		
Kawainui-Hāmākua Management & Research Station	14.2	DOFAW
Vegetation Processing Area	9.9	DOFAW
Nā Pōhaku o Hauwahine	11.1	DSP
Ulupō Heiau State Historical Park	9.2	DSP
Kapa'a Area for Cultural Practices	7.3	DOFAW
Wai'auia for Cultural Practices	1.3	DOFAW
Education Center and Open Space	8.4	DSP
Kawainui State Park Reserve, Kalāheo Section (Gateway Park Site)	4.6	DOFAW/DSP
<i>Program Area Acreage</i>	66.0	7%
Total Project Area Acreage	986.0	

2.2.1 Natural Resources Management Initiatives

Project improvements to manage and improve natural resources are intended to meet the project need for of resources restoration and support for DOFAW operations. Major initiatives include:

- Wetland Restoration
- Upland Reforestation
- Storm Water Runoff Improvements
- Improvements Supporting DOFAW Operations

Figure 2.2 shows DOFAW-designated management areas, with most of the project area consisting of wetlands needing restoration. All wetland restoration activities would generally take place in this area, which is highlighted in blue. Resource management initiatives occurring in the upland management area, highlighted in orange, include reforestation of upland areas, storm water improvements, and facility improvements supporting DOFAW operations. As shown in the figure, the wetland management area is further divided into subzones based upon DOFAW's specific planned restoration and management objectives for that area.

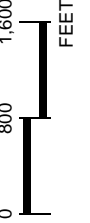


Source: State of Hawaiʻi GIS

Kawaiʻiui - Hāmākua Master Plan

Figure 2.2 - DOFAW Management Areas

Kailua, Oʻahu



HFE PLANNERS
places for people

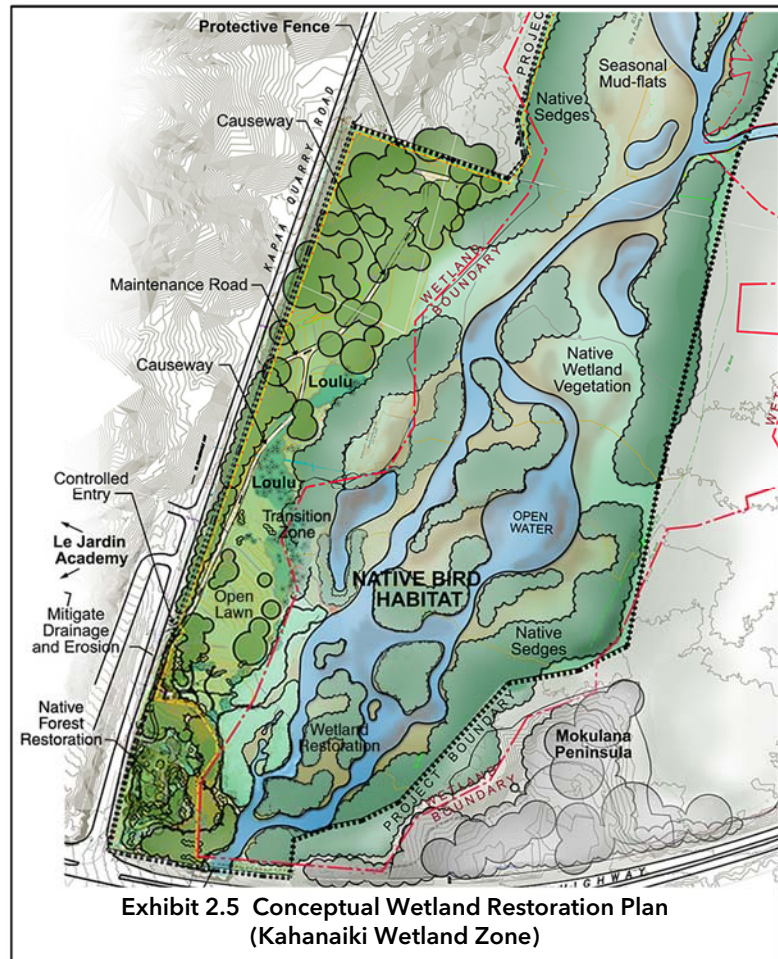
1. Hāmākua Wetland Zone (Hāmākua Marsh Wildlife Sanctuary). Intended for improving wetland habitat, shallow wetland creation, and stream bank enhancement. Activities include mowing, grubbing, debris removal, invasive species control, vegetation management, and monitoring of water level, water quality, and habitat activity.
2. DOFAW Restoration Ponds. These constructed ponds include management activities for vegetation removal and maintenance, and the monitoring of water level, water quality, and habitat activity.
3. Kahanaiki Wetland Zone. A 60-acre area mauka of the restoration ponds planned for wetland restoration by creating shallow open water, mud flats, and stream bank enhancements. Subsequent management activities would include mowing, grubbing, debris removal, invasive species control, vegetation management, and monitoring of habitat activity.
4. Open Water/Pothole Zone. Area planned to create and manage more open water areas, implement stream bank enhancements, create shallow wetlands, manage peat mat by removing trees and controlling its expansion, and monitor water level, water quality, and habitat activity.
5. Peat Mat Zone. Area important for Kawainui's flood control capability and would remain essentially unchanged, with the exception of selective removal of trees and managing peat mat growth.
6. Remediation Zone. Area also important for flood control capability and would remain essentially unchanged, with the exception of selective removal of trees.
7. Levee. Existing levee that would remain for flood control, would be monitored for maintenance and repair, and landscaped with grass on banks for stabilization. Its use as a pedestrian trail for passive outdoor recreational activities would be managed.
8. Wai'auia Wetland Zone. Intended for wetland restoration and stream bank enhancement. This would include mowing, grubbing, debris removal, invasive species control, vegetation management, and monitoring of habitat activity.

2.2.1.1 Wetland Restoration Activities

Wetland restoration work for various areas of Kawainui is planned to generally follow the program already being implemented for the 60-acre Kahanaiki Wetland Zone based upon the Kawainui wetland restoration and habitat enhancement project (HHF, 2012). This wetland restoration is planned to continue into the Open Water/Pothole Zone, and also be conducted at the Wai'auia Wetland Zone.

Kawainui. The primary focus of wetland restoration is to gradually remove invasive vegetation covering most of the wetland in Kawainui and restoring it with native vegetation. This would allow Kahanaiki Stream to naturalize, open up surface water flows, and establish seasonal mud flats.

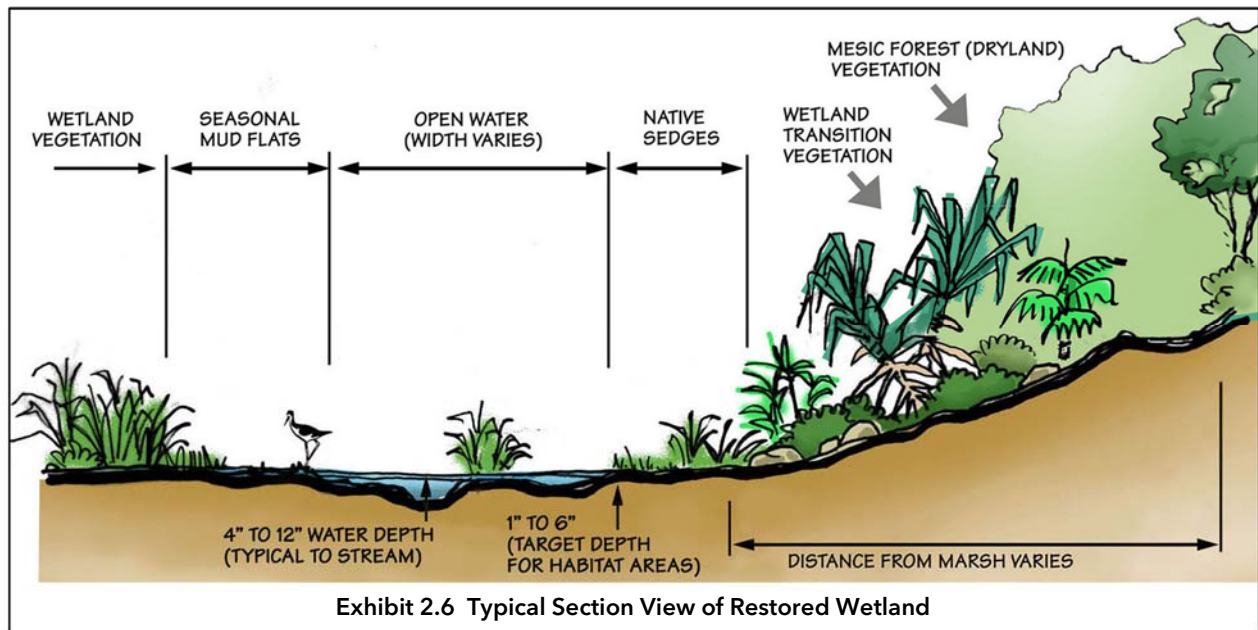
Wetland restoration within Kawainui and at Wai‘auia would involve gradual removal of invasive vegetation covering most of the wetland in the project area and restoring it with native wetland vegetation. This would allow Kahanaiki Stream to naturalize, open up surface water flows, and establish seasonal mud flats. Restoration work at the more confined Wai‘auia area would similarly open up water areas and establish mud flats. Exhibit 2.5 illustrates the restoration concept, based upon the Kawainui wetland restoration and habitat enhancement project. A combination of mechanical methods and localized application of herbicide would be implemented to remove vegetation and the peat mat. Staging areas within upland areas would be established to process biomass or store it awaiting transport to the vegetation processing site.



Existing invasive vegetation (e.g., California Grass, Cattail, etc.) would be removed along with dead vegetation that has formed a thatch layer. Below this vegetation is a contemporary sediment layer, about 12 to 20 inches deep, which was transported by storm water runoff over the years. A tractor, mower, or floating excavator would be used to cut or grub the vegetation and thatch layer up to a few inches below the soil level.

These activities would not occur within the bed and banks of Kahanaiki and Maunawili Streams. Unimpeded surface water flowing into the area from Kahanaiki Stream would be allowed to resume its natural course through the area. During the wet season, increased water flow should establish seasonal mud flats along the stream’s natural meandering course through the area. Exhibit 2.6 illustrates a typical sectional view of restored wetland areas.

Hāmākua. Restoration work at the Hāmākua Marsh Wildlife Sanctuary includes creating additional wetland areas (about 2 to 4 acres) along the mauka end of the wetland by lowering the elevation (grading) of adjacent upland areas. Other work planned within this wetland would consist of maintenance activities and improving waterbird habitat.



2.2.1.2 Upland Reforestation Activities

Initiatives in the upland management area would consist of reforestation efforts to gradually replace invasive trees and vegetation with native vegetation. Healthy upland zones provide a protective buffer between developed areas and the wetlands. The upland zone also includes those areas discussed later that are planned to support cultural practices, DOFAW management activities, an education center, pedestrian paths for passive outdoor recreational, areas for park use, and serve as general open space.

A hybrid ecosystem model for forest restoration is planned to allow native and existing non-native species to mix in a transitional period as shown on Exhibit 2.7. This hybrid ecosystem model benefits native biodiversity and aids the process of re-establishing a robust native forest. Since the project area has been heavily compromised by non-native invasive species, a process using a direct approach of clearing non-native plants and replacing them with native species is not cost effective or practical. By allowing some selective non-native plants to remain, particularly those with high canopies, other aggressive invasive species can be contained while understory plantings of native species can grow and mature. Once an appropriate density of native vegetation has been restored, remaining non-native species (high canopies) can be removed without allowing invasive species to return.

Trees and vegetation within upland areas would be selectively removed to retain a visual screen between roadways and the project area. Various types of native vegetation would be used for the area similar to those being planted at Nā Pōhaku o Hauwahine or at a nursery established at DOFAW's Kawainui-Hāmākua management and research station. Transitional plantings using cultural plants along with theme plantings would be incorporated between the wetland and low

mesic forest areas. Other upland areas would likely remain unchanged (e.g. slopes along Mōkapu Saddle Road and below Kūkanono Subdivision).

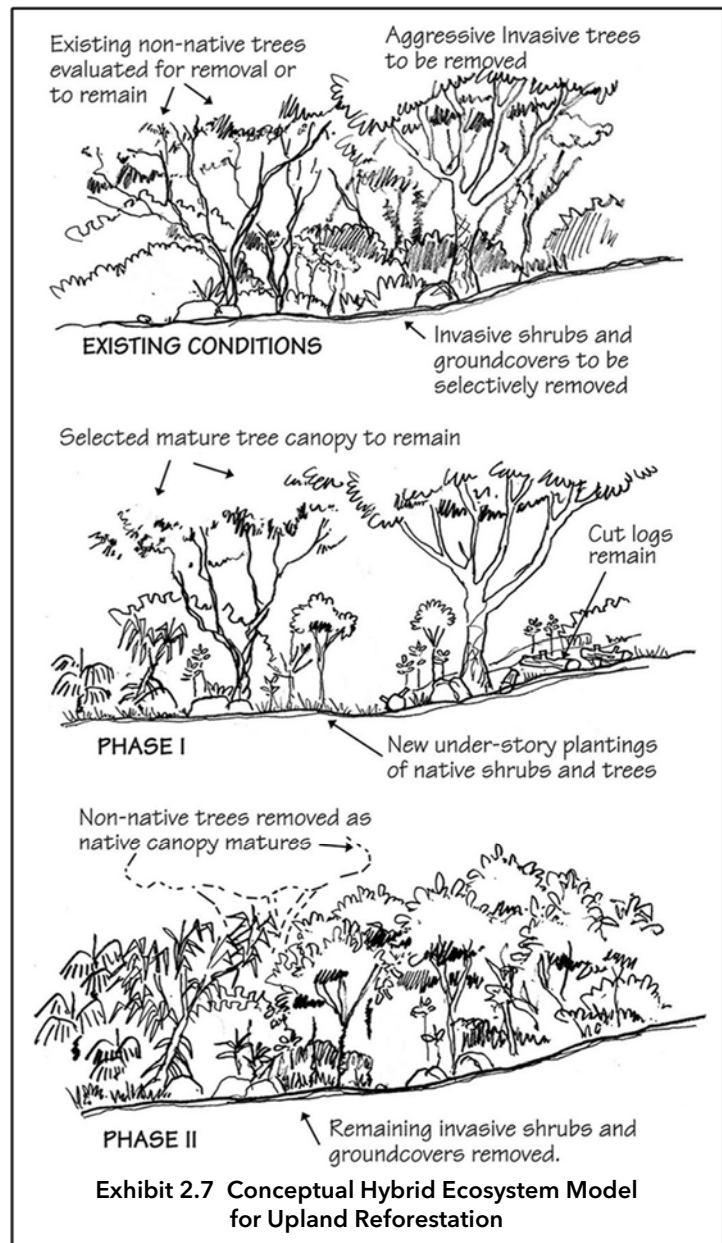
2.2.1.3 Storm Water Runoff Improvements

In the upland area along Kapa‘a Quarry Road, existing drainage culverts would be repaired to mitigate stormwater runoff discharging into Kawainui and Hāmākua. These culverts are generally in poor condition, filled with sediment, or in complete disrepair. Runoff discharging from these culverts has contributed to the erosion of upland areas and sedimentation of Kawainui. Detention areas would be created to slow and detain runoff before it enters the wetlands.

At Hāmākua, existing culverts along Hāmākua Drive are generally in good condition and do not appear to cause erosion in the area. However, repairs or improvements addressing this area would be implemented, as appropriate. Storm water runoff from the Pu‘uohu hillside would be evaluated to determine if improvements are needed to address discharges into Hāmākua to minimize erosion in the area.

Other measures to detain stormwater runoff before it discharges into the wetland may include creating terraced walls below culvert areas. Open areas created between these walls could be used for cultural plantings, such as dryland kalo (taro) and ‘uala (sweet potato).

Along DOFAW maintenance trails, gravel causeways could be created along the low point section of trails. During larger storm events when stormwater sheet flows over the trails, thus, causeways would slow and disperse runoff, reduce its velocity, and increase retention and infiltration before entering the wetland.



2.2.1.4 Improvements Supporting DOFAW Operations

The construction of maintenance roads is proposed in upland areas to support DOFAW's management and maintenance operations within Kawainui-Hāmākua. Maintenance roads are currently located within upland areas along Kapa'a Quarry Road. Access roads along the southern and eastern ends of Kawainui would also be provided to support maintenance of the restoration ponds. Maintenance roads are generally located well inland, however, vegetation buffers would be provided between certain sections of the road and the wetland, as appropriate. The roads would generally be about 10 feet wide, and could be constructed of compacted gravel, soil or reinforced grass. Only DOFAW vehicles or other authorized users would be allowed to use these roads.

Some segments of maintenance roads could also serve as pedestrian trails during specified periods as determined by DOFAW. At Pu'uoeahu hillside, a pedestrian maintenance path is planned about midway up the hillside along with on the top of the ridgeline to support future reforestation and management efforts.

A predator control program currently in operation would continue and be expanded throughout the project areas as larger areas are restored. Effective predator control would become more important as improved waterbird habitat is created and nesting activity increases. Traps would continue to be the primary predator control method utilized to control mongoose and feral cats. Traps would generally be established around the perimeter of the upper reaches of the wetland and extend into the upland areas.

Protective fencing is proposed to be installed around the boundaries of the project area to minimize intrusion by predators such as dogs and feral pigs. Fencing would also assist in managing access within restricted areas, and provide additional protection to environmentally sensitive areas.

2.2.2 Cultural Resources Management Initiatives

Cultural resource management initiatives meet the project objective to promote cultural preservation and stewardship. They are also consistent with the objective for public access, education and passive recreational use.

Proposed improvements seek to establish a greater and permanent native Hawaiian presence in Kawainui-Hāmākua. Three new areas within Kawainui have been identified for the establishment of cultural centers or facilities to support native Hawaiian cultural practices and educational programs. There are two existing areas which are Ulupō Heiau SHP and Nā Pōhaku o Hauwahine. All of these areas are summarized below and further discussion is provided in Section 2.2.4, which presents the concept plans.

1. **Nā Pōhaku o Hauwahine.** Existing site under DSP jurisdiction that includes a pedestrian path, viewing site and educational program areas, and has been undergoing reforestation of upland areas.
2. **Ulupō Heiau State Historical Park.** A historic site under DSP jurisdiction which includes Ulupō Heiau and has been undergoing restoration of the cultural landscape surrounding the heiau.
3. **Hawaiian Cultural and Environmental Complex Area.** An area along Kapa‘a Quarry Road designated for the establishment of a cultural center for native Hawaiian cultural practices and education.
4. **Hawaiian Studies Center at Wai‘auia.** An area along a strip of upland at Wai‘auia is designated as a center for Hawaiian studies. A burial preserve/reinterment site would also be established and maintained at this site.
5. **Pōhākea Cultural and Educational Area.** An area next to an Educational Center planned by Nā Pōhaku o Hauwahine would include the kauhale concept of traditional Hawaiian structures providing an interpretive element for park visitors to learn about pre-contact settlement and subsistence along Kawainui.

2.2.3 Educational and Recreational Program Initiatives

These initiatives directly support the project objective to provide public access, education and passive outdoor recreational use. Educational and recreational programming initiatives directly respond to DLNR public education and recreational goals. They also meet the mandate of Section 6(f) of the LWCF Program to provide public recreational opportunities on lands acquired with these federal funds.

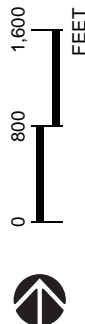
Passive recreation activities are proposed within Kawainui in the form of perimeter paths and foot trails with viewing locations. Accessory support facilities would include shelters and restrooms at select locations. Pedestrian of multi-purpose trails would provide the public with the opportunity to view Kawainui and its resources (e.g. wetlands, avifauna), and also support activities related to educational programs. Students would use the paths and trails to access areas where hands-on learning could occur. Designated viewing locations would also support educational programs by providing shelter and potential instructional areas. Figure 2.3 shows the general location of proposed pedestrian paths within Kawainui. More details are provided in the conceptual plans in the next section.

An educational center for visitors is proposed at a site located south of Nā Pōhaku o Hauwahine. This facility would function as both an educational and visitor center, and is envisioned to include space for informational and educational materials, restrooms, administrative offices, vehicle parking, and other accessory support facilities. The educational center would serve as a starting point for visitors to Kawainui, and serve as a base location for accessing pedestrian paths



Kawainui - Hāmākua Master Plan

Figure 2.3 - Proposed Pedestrian Paths



HHF PLANNERS
places for people

along the surrounding upland areas. Programs are planned to educate visitors about the importance of wetlands and the area's cultural resources, creating more engaged and knowledgeable community stewards.

To enhance the educational experience, a *kauhale* (traditional homestead) complex is proposed south of the educational center in an area known as Pōhākea (former Cash Ranch site). The *kauhale* would include traditional Hawaiian *hale* illustrating typical Hawaiian settlement and subsistence around the Kawainui fishpond during the pre-contact period. The parking area for the educational center would also accommodate visitors and volunteers at Nā Pōhaku o Hauwahine and Pōhākea.

DOFAW currently sponsors service learning projects to provide students with hands-on knowledge about basic wetland function, native/invasive species, and management techniques for restoring wetland function. DOFAW also conducts long-term data collection through its relationship with the Center for Conservation, Research and Training (CCRT) at the University of Hawai'i at Mānoa. These activities provide a base for expanded learning opportunities.

DOFAW plans to create specific venues at Kawainui-Hāmākua for an integrated program of education, scientific research, and community stewardship/service learning. The program would be based on the three themes common to managing wildlife sanctuaries: 1) natural resources; 2) community stewardship; and 3) education. The curriculum and activities would target elementary through graduate level students in partnership with non-profit organizations, schools, and universities.

School groups would also have an opportunity to participate in scientific data collection. Students would learn to analyze the data and help to create long-term data sets that could be used by DOFAW in existing or planned management projects. To ensure consistency and long-term availability, all data collection and projects would be developed using criteria and techniques currently used by DOFAW.

The proposed park use within the Kalāheo Section of Kawainui SPR along Kawainui Canal would have a canoeing component supporting both recreation and educational opportunities. Certain schools and canoe clubs have already used the area for launching canoes into the canal as part of school practices or club activity. Nearby schools (Kalāheo High School and Le Jardin Academy) have expressed interest in using the site on a more permanent basis to launch and store canoes in conjunction with school practices. This site also provides opportunities for educational activities related to the sport of canoe paddling. Non-profit organizations have expressed an interest in coordinating and conducting these educational activities at this site.

2.2.4 Conceptual Site Plans

Figures 2.4 to 2.11 provide conceptual site plans for selected project subareas. These conceptual plans are based upon the *Draft Kawainui-Hāmākua Complex Master Plan* (HHF, 2014), but have been updated to include revisions and refinements to concepts as discussed in the beginning of Section 2.2 which are now being addressed under this EIS process. The following table lists the subarea conceptual plans and the major proposals.

Table 2.2 Summary of Major Proposals			
Subarea	Subarea Name	Conceptual Site Plan	Major Proposals
A	Kawainui	Figure 2.2, DOFAW Management Areas	-Wetland restoration -Invasive species removal -Wildlife sanctuary management
B	Kahanaiki-Nā Pōhaku-Kapa'a	Figure 2.4, Kahanaiki Section	-Upland vegetation restoration -Drainage improvements along Kapa'a Quarry Road -Pedestrian paths with observation decks/lookouts -Managed parking and program staging area
		Figure 2.5, Nā Pōhaku Section	-Upland restoration -Drainage improvements along Kapa'a Quarry Road -Pedestrian paths and foot trails -Education center with parking -Hawaiian kauhale complex in outdoor area at education center
		Figure 2.6, Kapa'a Section	-Hawaiian Cultural and Environmental Complex -Pedestrian path along Kapa'a Quarry Road -Reestablish vegetation processing area
C	Kapa'a-Kalāheo	Figure 2.7, Kapa'a-Kalāheo C	-Upland reforestation -Drainage improvements along Kapa'a Quarry Road -Passive recreational park with canoe launch and support facilities
D	Levee	None	-Levee maintenance and landscaping
E	Wai'auia-Mokulana	Figure 2.8, Wai'auia	-Open space supporting DOFAW maintenance -Pedestrian path connecting to levee -Center for Hawaiian studies to support cultural practices -Burial reinterment site
		Figure 2.9, Ulupō Heiau State Historical Park	-Pedestrian path and foot trail linking levee with Ulupō Heiau SHP and to DOFAW Management and Research Station -Cultural landscape improvements at Ulupō Heiau SHP
		Figure 2.10, Mokulana	-DOFAW Management and Research Station improvements -Pedestrian path with support areas connecting research station with Mokulana Peninsula
F	Hāmākua-Pu'uoeahu	Figure 2.11, Hāmākua and Pu'uoeahu	-Improvements to support DOFAW management -Upland reforestation of Pu'uoeahu hillside -Hāmākua wetland improvements and management

2.2.4.1 Subarea A: Kawainui

The Kawainui Subarea A encompasses the entire Kawainui wetland area, and proposed improvements focus on wetland restoration and management activities as previously discussed in Section 2.2.1.1. Figure 2.2 illustrated the DOFAW-designated management zones, each with specific restoration objectives.

2.2.4.2 Subarea B: Kahanaiki-Nā Pōhaku-Kapa‘a

Kahanaiki Section

The Kahanaiki section of Subarea B is shown in Figure 2.4, and generally includes the upland areas along Kapa‘a Quarry Road from its intersection with Kalaniana’ole Highway and proceeding northbound. The major improvements planned for this section include:

1. Continued upland reforestation work as described in Section 2.2.1.1.
2. Drainage improvements and repairs along Kapa‘a Quarry Road.
3. Pedestrian paths and foot trails with observation decks/lookouts.
4. Visitor parking lot at south end also used as program staging area.

In this section, DOFAW is already implementing upland forest restoration and drainage improvements to address erosion, and these improvements would continue under the already-approved Kawainui restoration project (HHF, 2012). In combination with the education center planned at the Nā Pōhaku section, this Kahanaiki section is planned to support and serve as an “outdoor classroom” for place-based educational programs. The proximity to wetland habitat restoration improvements being implemented by DOFAW make it an ideal environment for explorations in natural resources-based curriculum.

This also serves as a unique area for viewing opportunities of Kawainui. Pedestrian paths, with possible shared path use, and foot trails are planned along with designated observation areas with interpretive signage to support passive outdoor recreation and education. These improvements support the LWCF Section 6(f) requirement for public access and outdoor recreational opportunities.

Managed Parking with Gated Entries: There are three existing gated access points from Kapa‘a Quarry Road into this upland area as shown on the concept plan. These DOFAW-managed entrances access unpaved access roads that would continue to serve DOFAW activities such as upland reforestation work, maintenance, wetland restoration work, educational and stewardship programs, and special activities.



The southern access nearest Kalaniana'ole Highway leads to a visitor parking lot with about 25 parking stalls, including handicapped stalls. This parking area is intended to serve both visitors to Kawainui accessing pedestrian paths and foot trails, and function as a staging area for educational programs (e.g. school bus) and management activities (e.g. clean-up event). The parking lot would be gated and only open during daylight hours. This parking area would have a compacted gravel or other permeable surface to minimize storm water runoff along with other environmentally-friendly design measures (e.g. bioswale).

The next access located further north and generally across Le Jardin Academy's entrance would continue to serve DOFAW for their management activities. A program staging area would be established to be used for the loading/unloading of student groups for educational programming and service learning activities. This area would also function as operational space for DOFAW restoration, reforestation, and maintenance activities, equipment storage, and possibly for storing green waste from restoration activities prior to transport to the vegetation processing site.

The third access would continue to serve DOFAW's existing maintenance road providing access to additional upland areas for restoration and maintenance activities.

Pedestrian Paths and Amenities: DOFAW's existing unpaved maintenance roads within this upland area used for management activities would also function as pedestrian paths for visitors, or possibly shared-use paths. Additional path sections would extend from these roads to provide visitor access closer to the wetland and to observation areas. Foot trails are also planned within these upland areas as shown on Figure 2.4.

Maintenance roads and pedestrian paths would be about 10 to 12 feet wide, and continue to be unpaved or improved to consist of a permeable surface using materials such as gravel, Grass Crete, etc. Foot trails would be grassed or dirt trails, similar to hiking trails, about 4 to 6 feet wide and only accessible by foot. At the southern end of this section, a bridge would be needed to provide a crossing over Kahanaiki Stream to continue the maintenance path to Mokulana Peninsula. This bridge would support DOFAW maintenance vehicles and pedestrian use, and would span over the stream to minimize effects.

Two observation areas are planned to provide scenic viewing points of Kawainui. These viewing locations are proposed near the southern parking area and near the program staging area for convenient access. Observation decks with interpretive signage are proposed at each viewing location. One observation area is proposed to include a boardwalk extending slightly into the wetland to provide enhanced viewing opportunities.

An open air pavilion is also planned near the program staging area where one of the paths leading to the observation area and boardwalk is. The approximately 350 square-foot wooden structure would provide shelter from the elements and serve as a rest area supporting educational programming and outdoor recreation. A restroom facility is also being considered near this pavilion.

Nā Pōhaku Section

The Nā Pōhaku section of Subarea B is an upland area under the jurisdiction of DSP. This section continues north from the Kahanaiki section along Kapa‘a Quarry Road up to Nā Pōhaku o Hauwahine. Figure 2.5 shows the major concepts for this section which include:

1. Continued upland reforestation work (previously discussed).
2. Drainage improvements along Kapa‘a Quarry Road (previously discussed).
3. Pedestrian paths and foot trails.
4. Education center with parking for visitors along with traditional Hawaiian kauhale complex at adjacent lawn area.

This Nā Pōhaku section, in combination with the Kahanaiki section immediately to the south, is intended to support place-based education and serve as an “outdoor classroom.” The area’s proximity to wetland habitat restoration improvements along with reforestation efforts at Nā Pōhaku o Hauwahine make it an ideal environment for supporting educational programming.

Unique viewing opportunities of Kawainui is provided from pedestrian paths and foot trails, and Nā Pōhaku o Hauwahine provides sweeping views of the wetland and the Kailua ahupua‘a. Public access, passive outdoor recreational opportunities, and educational programming would directly support the LWCF Section 6(f) mandate that must be met for this area.

Pedestrian Paths: Pedestrian paths and foot trails from the Kahanaiki Section would continue in this area, as shown on Figure 2.5. Pedestrian paths would be about 10 to 12 feet wide, and similarly consist of a permeable surface. Most of the pedestrian paths shown would be designed to also accommodate both DOFAW, DSP, and other authorized vehicles used for management and maintenance operations. Foot trails would also continue to be 4 to 6-foot wide grassed or dirt trails. The existing foot trail at Nā Pōhaku o Hauwahine would be maintained.

Education Center: A proposed education center would serve as a starting point for students and visitors coming to the area for orientation and educational programs. The education center building is planned to be designed using post-and-pier construction to minimize ground disturbance, and would provide dramatic, panoramic views of Kawainui. An entryway with a reception desk, a common area/exhibits room, a multi-purpose room, an office, restrooms, and a storage area are planned for the approximately 4,000 square feet of interior space. A covered, outdoor wrap-around walkway is planned that would lead to a viewing deck nestled under the canopies of large shade trees.



Kawainui - Hāmākua Master Plan
Figure 2.5 - Conceptual Plan Subarea B - Nā Pōhaku Section (Kawainui State Park Reserve)

A preliminary conceptual layout for this building is illustrated in Exhibit 2.8, and the Draft EIS would include more information and refinements to this concept, as applicable. The actual design of this building would be developed in the future when implemented by DSP. DSP plans to have a non-profit organization operate the education center and possibly construct this facility, if feasible. The selected organization would be qualified to develop and implement programs and educational curriculum, and would likely be selected through a Request for Proposal (RFP) process.

An existing gated entry is already provided at the driveway access on Kapa‘a Quarry Road. Because it would be the primary visitor point of entry, the entrance area would be landscaped and include wooden signage conforming to DSP park standards. The entry gate would be open during daylight hours and locked at night.

A parking lot with about 35 parking stalls, including handicapped stalls is planned. The parking lot would accommodate visitors to the area as well as volunteers participating in restoration activities at Nā Pōhaku o Hauwahine. The parking area would include a drop-off area for school/shuttle buses at the entrance to the education center. The parking area would have a compacted gravel or other permeable surface to minimize storm water runoff. Low-impact design (LID) elements such as bioswales, bioretention areas, and rain catchment systems would also be considered. Exhibit 2.9 includes a conceptual section of the parking area and some LID design concepts to minimize storm water runoff.

The area south of the education center consists of an open lawn with limited and controlled vehicle access. Under a permit issued by DSP, this area, known as Pōhākea, is currently being used on a short-term basis by a native Hawaiian organization for traditional cultural practices. As an added element to the education center, the construction of a traditional Hawaiian kauhale complex is proposed at Pōhākea to assist in interpreting the cultural history of Kawainui. This kauhale cultural site would thus be an extension of the education center. DSP would similarly issue an RFP to select a non-profit organization to construct these improvements and implement a cultural educational program in conjunction with the education center’s programs.

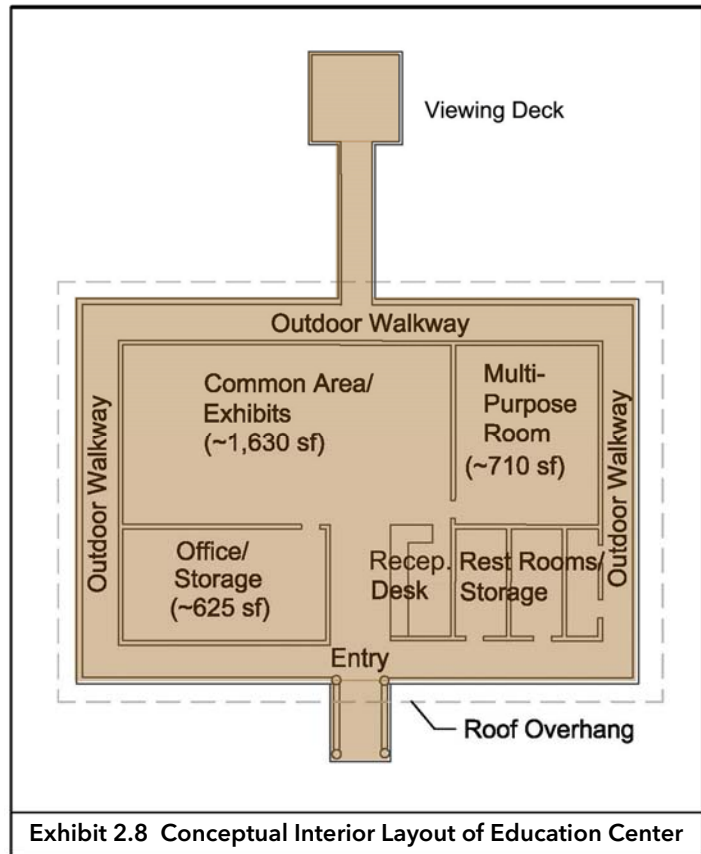
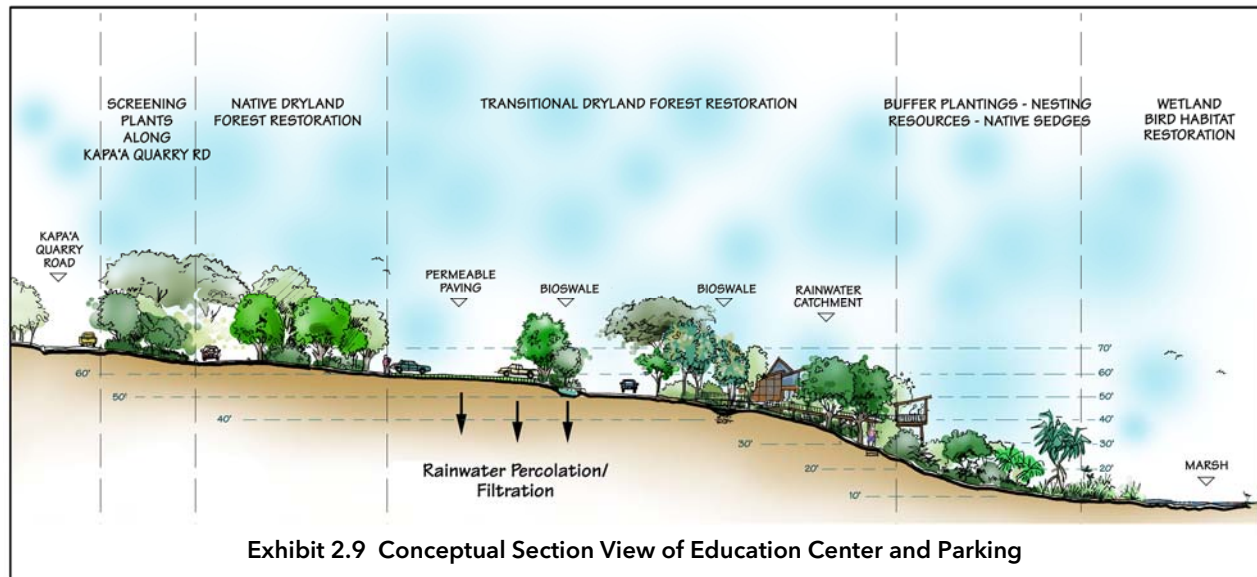


Exhibit 2.8 Conceptual Interior Layout of Education Center



The kauhale complex is planned to encompass an area of approximately 10 acres and consist of up to seven hale and/or hālau (traditional Hawaiian pole and thatch structures), a lo'i kalo, gardens of native and Polynesian-introduced plants, and recreational features such as a hōlua slide. The traditional function of the hale/hālau included dwellings, a cooking house with imu, canoe storage, and work areas for kapa-making and lauhala weaving. A footpath through the kauhale complex would share the traditional use of these structures, but they can also be adaptively used to support the perpetuation of Hawaiian cultural traditions and practices through educational programs and cultural events for the public.

In compliance with the LWCF Section 6(f) requirements, the site would provide public programs and access with some opportunities to experience traditional Hawaiian outdoor recreational activities such as kōnane, 'ulu maika, and hōlua demonstrations. Programs centered around the theme of the Hawaiian kauhale would be offered for schools and visitors in conjunction with the education center. Figure 2.5 includes a conceptual representation of this kauhale complex.

Kapa'a Section

The Kapa'a section of Subarea B, shown in Figure 2.6, is an upland area under the jurisdiction of DOFAW. It includes the area north from Nā Pōhaku up to (but not including) the City's model airplane park. Across from this area (mauka) is the City's Kapa'a Refuse Transfer Station and roadway leading into the Kapa'a light industrial park. The figure shows the major concepts proposed for this section which includes:

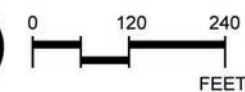
1. An area designated for a native Hawaiian cultural practices.
2. Pedestrian path along Kapa'a Quarry Road.
3. Re-establishing use of the vegetation processing area next to the model airplane park.



Kawainui - Hāmākua Master Plan

Figure 2.6 - Conceptual Plan Subarea B - Kapa'a

Kailua, O'ahu



Hawaiian Cultural and Environmental Complex: An approximately 9-acre area is designated for use by one or more non-profit organizations for native Hawaiian cultural practices. A portion of this site was formerly used by the City as a road maintenance baseyard and another area was used for vegetation processing for Kawainui. The purpose of the complex is to support cultural practices and educational efforts to ensure that Hawaiian knowledge, skills, and practices continue into the future, and to provide for a permanent cultural presence at Kawainui. It would not be a complex open to the general public.

It is conceived as a place for kanaka maoli to gather and share knowledge, and to support the stewardship and caring for (mālama ‘āina) Kawainui and the Kailua ahupua‘a. The complex is intended to be a peaceful place of spiritual, cultural, and environmental well-being. For example, kumu hula can teach ancient dances, sustainability practitioners can teach and apply the science of collecting and harnessing alternative energy, mahi‘ai (farmers) can instruct students how to create and sustain lo‘i kalo and māla, and contemporary practitioners can demonstrate and implement the native Hawaiian conservation ethic. Educational components would include instruction in agriculture, chant, arts and crafts, environmental conservation and stewardship, recycling, and teaching related directly to the legends, history, and science of Kawainui-Hāmākua. It would be also be a place for exchange with other indigenous cultures.

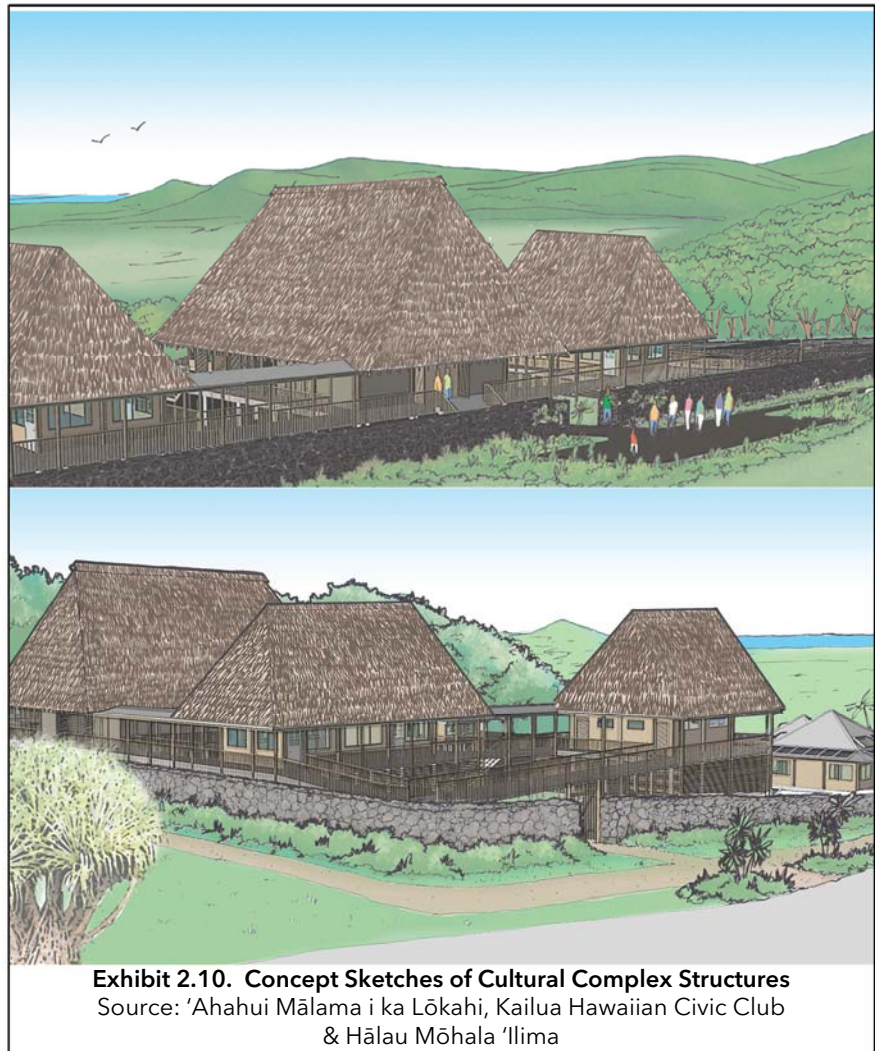
The complex could host school groups of 20 to 25 students up to three times per week. Two or more times per week, the complex would conduct stewardship work sessions for up to 25 volunteers at the site, at Nā Pōhaku o Hauwahine, and other areas within Kawainui. Occasional larger gatherings for special celebrations could also take place during the year. DOFAW and DSP would also be available to conduct educational or stewardship activities related to native Hawaiian cultural practices at this site in coordination with the non-profit organization(s).

The complex would be comprised of several single-story structures incorporating traditional hale design concepts. Structures would support administrative, classrooms, hale for programs, restrooms, storage, workshops, kitchen, and a caretaker’s cottage. Support structures would include water storage and a plant nursery with shade structures. Other components planned would include a hula mound and imu. Buildings are intended to reflect traditional and sustainable design elements, and incorporate Leadership in Energy and Environmental Design (LEED) concepts or other similar sustainable building guidelines. LID elements such as bioswales, bioretention areas, and rain catchment systems would also be considered in the project’s site design.

About 4,000 square feet of interior space is planned (not including nursery), and concept sketches for this complex are shown on Exhibit 2.10. However, the actual design would be developed in the future when implemented by DOFAW. A non-profit organization would be responsible for constructing and operating this complex. The selected organization would need to be qualified and would likely be selected through a RFP process.

Vegetation Processing

Site: An existing green waste processing site located north of the Hawaiian cultural and environmental complex would be improved for use by DOFAW to support their wetland restoration and upland reforestation efforts. The site is about 14 acres in size and was previously used by the City for their vegetation processing activities at Kawainui. Composting green waste supports DOFAW's management activities because it produces organic material that can be used to revitalize soil, promote healthy plant growth, and improves aeration/water retention. Composting would also reduce the amount of green waste that may be disposed of at the landfill.



Composting is an approximately three-month-long process that does not produce harmful byproducts that could leach into the wetland, and is generally odorless with oxygen used as a component of the process. The composting process consists of: 1) grinding material into smaller pieces to speed the process; 2) piling material into windrows to keep green waste moist, and build heat to kill weed seeds and pathogens; and 3) turning windrows every 3 to 7 days to keep green waste exposed to oxygen. The processing operations may be conducted by DOFAW or through a third-party operator selected through a RFP process.

The vegetation processing site would have a locked gate to prevent vehicular access afterhours, and include a compacted gravel main access driveway from Kapa'a Quarry Road. Additional compacted gravel routes for operational vehicles would be provided within the site. Facilities totaling about 4,000 square feet of interior space would include a single-story office building for administration and operations, a maintenance building, and a large shed for supporting

equipment storage and other necessary operations support. Staging areas for receiving and disposing of green waste, areas for windrows, and other processing area would be created.

2.2.4.3 Subarea C: Kapa'a-Kalāheo

This subarea runs from north of the Model Airplane Park to the intersection of Kapa'a Quarry Road and Mōkapu Boulevard and includes another 4.6 acres to the north of the intersection. It consists of the upland area along Kapa'a Quarry Road and a parcel adjacent to Kawainui Canal. Most of this area is under the jurisdiction of DSP as the Kalāheo Section of Kawainui SPR. Planning for the parcel adjacent to the canal was conducted in the early 2000s by the City under another project named the Gateway Park. Figure 2.7 shows the following concepts planned for this section:

1. Continued upland reforestation work and drainage improvements along Kapa'a Quarry Road.
2. Passive recreational park which includes a canoe launch into Kawainui Canal.

Kawainui State Park Reserve, Kalāheo Section: A conceptual site plan is shown on Figure 2.7. The main park components include an interpretive shelter supporting Kawainui-Hāmākua, restrooms with showers, and a hale wa'a (shelter for canoe storage).

Proposed improvements focus on vegetation restoration along Kapa'a Quarry Road and construction of park facilities for interpretive and canoe-related activities adjacent to the canal. To allow for the launching of canoes into the canal, the embankment would be reinforced with grass to stabilize the slope. Design for this launch area would be refined based on consultation with the U.S. Army Corps of Engineers. Canoe launching by schools and paddling teams issued permits by DSP would provide recreation opportunities and also a means of supporting traditional cultural practices related to canoeing. Proposed support facilities include structures for canoe storage, a parking area to accommodate approximately 42 stalls, a parking area for canoe trailers, restrooms with showers, and an interpretive shelter. A gated entry would prevent vehicular access during closed hours.

The interpretive shelter is envisioned as a wood-framed building of about 1,000 square feet. Exhibit 2.11 shows an interpretive shelter at Lapakahi State Historical Park on Hawai'i Island. A similar but slightly larger structure is proposed for the Kalāheo section site.



The interpretive center would include a gathering space and small office in addition to the exhibits. The interpretive shelter would offer visitors and educational groups the opportunity to orient themselves to Kawainui-Hāmākua. The parking lot and restrooms would be open during daylight hours, and locked at night.

An approximately 3,600-square-foot hale wa‘a building inspired by traditional Hawaiian architecture is planned. This secured building could accommodate up to six six-man canoes and equipment. It would include a small meeting room, and a large covered lanai to provide space for educational/cultural activities. The building could also be used for educational and cultural programs such as canoe/voyaging studies, canoe building, celestial navigation, etc. in partnership with non-profit organizations, schools, and DSP. The facility could be constructed and operated by a school or non-profit organization, under a DSP lease or revocable permit.

2.2.4.4 Subarea E: Wai‘auia-Mokulana

Wai‘auia

Wai‘auia is a 16.5 acre area within Subarea E, situated along Kailua Road near the entrance to Kailua town. This area is under DOFAW jurisdiction, and is bordered by the City’s sewage pump station parcel (northeast), the levee on the southwest, and extends south along Kailua Road to the boundary with Ulupō Heiau SHP. About three acres is upland area situated along Kailua Road with the remaining areas comprised of wetland. Figure 2.8 shows the concepts planned for the Wai‘auia section and southbound toward Ulupō Heiau SHP. The proposals for Subarea E include:

1. Open space supporting DOFAW maintenance activities along with a pedestrian path connecting to the levee.
2. An area planned to support native Hawaiian cultural practices.

A burial preserve is proposed as a reinterment site for native Hawaiian remains (iwi kupuna) that have been disinterred by construction projects in the Kailua ahupua‘a. The burial preserve would be about 800 square feet in size and constructed by the City Board of Water Supply (BWS). Since the 1990s, several BWS water main replacement projects have disinterred iwi kupuna. The remains have been held by the State Historic Preservation Division (SHPD) in a temporary curation facility, and could now be reinterred at the site. The Kailua native Hawaiian cultural descendant group Kailua Kau a Ho‘oilō (KKAH) or another organization would enter into a Memorandum of Agreement with DOFAW for the long-term care of the reinterment site.



Wai‘auia Center for Hawaiian Studies: An approximately 1.3-acre area is designated for use by a non-profit organization for native Hawaiian cultural practices. Wai‘auia holds cultural significance in Hawaiian legends, traditions, and religious practices, and is noted to be the location where the waters of Kawainui once connected with the waters of Hāmākua. The intent is that the site become a center for Hawaiian studies in performing and literary arts. It would be operated by a non-profit organization that would also be responsible for supporting the non-profit organization responsible for the long-term care and management of the burial preserve.

The center is planned as three single-story structures totaling about 5,000 square feet of space. Structures would support administrative operations, classrooms, a hale for programs and performances, work areas for artisans, storage, meeting rooms, kitchen, and restrooms. Other features would include a hula mound and landscaping. Buildings would reflect traditional and sustainable design elements, and incorporate LEED concepts or other similar sustainable building guidelines. LID elements such as bioswales and bioretention areas would also be considered in the project’s site design. A 15-stall parking lot is proposed. Some of the stalls could be made available during certain times to the public. Vehicular access would be from the property’s driveway entrance or possibly the City’s sewage pump station access.

Most activities would occur during the day, with occasional use at night for cultural activities or classes. DOFAW and DSP staff would be available to conduct educational or stewardship activities related to native Hawaiian cultural practices, in coordination with the non-profit organization. The non-profit organization would manage portions of the wetland boundary (vegetation maintenance) along this site, in coordination with DOFAW. The actual design of this center for Hawaiian studies would be developed by the non-profit organization in the future when implemented. The non-profit organization would be responsible for constructing and operating this complex. The selected organization would need to meet specific qualifications, and would likely be selected through a RFP process.

Pedestrian Path: As shown in Figure 2.8, a pedestrian path is proposed generally routed along Kailua Road. This path would extend north connecting the levee to the parking lot serving the planned center for Hawaiian studies. The pedestrian path would be about 10 to 12 feet wide, and consist of a permeable surface (e.g. gravel, Grasscrete) that would be determined during the design phase. This pedestrian path would be designed to provide vehicle access to support DOFAW wetland management and maintenance operations. An observation deck with interpretive signs is proposed to provide scenic views of Kawainui.

Transition to Ulupō Heiau Segment

From the levee to the boundary with Ulupō Heiau SHP, there is a steep, rocky slope between Kailua Road and the wetland. The 5-acre area under the jurisdiction of DOFAW abuts St. John Lutheran Church and the Kawainui Vista subdivision as shown in Figure 2.8.

A pedestrian path with foot trail is planned to link the levee with the Ulupō Heiau SHP. The pedestrian path would be about 8 to 10 feet wide, and consist of a permeable surface (e.g. gravel, Grasscrete) that would be determined during the design phase. Fronting the Kawainui Vista subdivision, a boardwalk about 365 feet long would be required for the path to cross over wetland, while providing a 300-foot buffer from the residences on top the bluff. Exhibit 2.12 shows the Keālia Coastal Boardwalk on Maui as an example of a type of boardwalk that could be designed. The pedestrian path could be designed to stay outside of the wetland, but would need to be routed closer to the residences that are situated on the hillside about 30 feet above the wetland.



**Exhibit 2.12 Example of Boardwalk
(Keālia Coastal Boardwalk, Maui)**

Ulupō Heiau State Historical Park Section

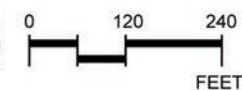
Most of the 28.9 acres of Ulupō Heiau SHP are located on the slope between the Kawainui wetland and the developments along Kailua Road, including Kailua United Methodist Church, Windward YMCA, and the Kūkanono residential subdivision. DSP proposes the following improvements for the 9 acres adjacent to the heiau as shown in Figure 2.9:

1. Restoration of the cultural landscape around Ulupō Heiau that involves removing the alien vegetation and replanting the area with Polynesian-introduced plants.
2. Constructing a small nursery consisting of wooden benches and sunscreens to facilitate the cultural landscape restoration.
3. Construction of a traditional pole and thatch hālau for cultural demonstrations and interpretive gatherings.
4. Developing a trail system through the park and connecting with the path that runs along the eastern side of Kawainui.

The proposed improvements are based upon elements from a *Draft Ulupō Heiau Cultural Resources Management and Landscape Plan* (Orr, McNamara, Palama and Yent, 2011). This unpublished draft plan was prepared in 2011 by the curators of Ulupō Heiau (Kailua Hawaiian Civic Club and ‘Ahahui Mālama I Ka Lōkahi) and DSP with input from the cultural community.



Kawainui - Hāmākua Master Plan
 Figure 2.9 - Conceptual Plan Subarea E - Ulupō Heiau State Historical Park



The overall concept for this area is to continue ongoing cultural landscape restoration, accommodate cultural protocol and access by cultural practitioners, and continue cultural and educational programs along with visitation by the public. The cultural landscape of Ulupō Heiau would be restored to reflect the pre-contact settlement and subsistence pattern of Kawainui and the Kailua ahupua‘a. Recommendations include preserving and protecting archaeological and cultural sites, establishing buffers, and planting culturally appropriate native and Polynesian-introduced species to provide resources for programs and practitioners. Alien vegetation would be removed to enhance view corridors.

Three areas consisting of 22 lo‘i kalo have already been restored in the area, and more could be created to perpetuate farming traditions and provide kalo for cultural programs. A number of cultivated crop plants are included around the lo‘i. A garden of medicinal plants (lā‘au lapa‘au) is planned to provide a resource for practitioners of traditional healing, as well as an open area for educational and cultural programs. Plants for traditional crafts, such as lauhala for weaving and wauke for kapa making, would be planted. Some native Hawaiian and Polynesian-introduced trees and shrubs would be planted as visual buffers and to provide shade for program areas.

A traditional Hawaiian hālau consisting of a rock wall foundation, a pole-frame structure, and a thatched roof is planned. At approximately 2,500 square feet in size, the hālau would serve as a gathering place for interpretive talks, demonstrations, educational programs, and cultural activities. The hālau could also house displays, exhibits, and interpretive panels. An open area adjacent to the hālau provides a gathering area for activities. A small kiosk with two to three interpretive signs at the site’s entry would provide an introduction to the site, an overview of the cultural history, and resource management messages. A plant nursery would support cultural landscape restoration activities. Other amenities would include foot trails routed through the site. Fencing along the State’s property line would be provided.

YMCA Coordination: The DSP is coordinating with the Windward YMCA to acquire about 3.5 acres of their property to provide an open space buffer around Ulupō Heiau. Consultation with the YMCA is ongoing, therefore, the project does not propose improvements for the area. In the future, should the property be acquired, plans would be developed and necessary entitlements obtained for any planned improvements.

The deed that transferred the 5-acre property to the YMCA in 1961 provides an easement over the existing driveway from Kailua Road as the public access, and provides for public use of the parking lot adjacent to the heiau. The YMCA’s existing rear parking lot accommodates 16 stalls, of which five are set aside for heiau visitors. This driveway is presently gated at Kailua Road and public access is provided from the YMCA facility. No improvements are planned using the YMCA property or driveway from Kailua Road.

Pedestrian Path: A pedestrian path from the Ulupō Heiau site to the DOFAW Kawainui-Hāmākua Management and Research Station is shown on Figure 2.9. The pedestrian path would be about 10 to 12 feet wide and include a permeable surface. The path would be routed along the base of the adjacent hillside approximately 250 to 300 feet below the residences of the Kūkanono subdivision.

Several small viewing platforms are proposed along this pedestrian trail to provide viewing opportunities of Kawainui, the restoration ponds, and wildlife. Some reforestation work along the pedestrian path would be implemented, however, existing vegetation along the steep hillside would remain. Fencing would be added along the State's property line with the Kūkanono subdivision.

Mokulana Section

The Mokulana section of Subarea E encompasses several parcels situated below (west) Castle Medical Center, including the Mokulana Peninsula. This section is under DOFAW jurisdiction and is about 21.5 acres in size. Given its proximity to the Kawainui Restoration Ponds completed in early 2013, this area would serve as a center for educational and stewardship activities essential for maintaining these ponds. Figure 2.10 shows the concepts planned for this section which include:

1. DOFAW's Kawainui Management and Research Station.
2. Pedestrian path connecting DOFAW's station with the Mokulana peninsula with viewing decks along the pathway.
3. Parking area and public recreation area.

DOFAW Kawainui Management and Research Station

Figure 2.10 shows the location and facilities associated with the DOFAW Kawainui Management and Research Station, which supports the operation and management of Kawainui, as well as the agency's scientific, educational, and recreational mission and goals. The 15-acre site is generally bounded by the Maunawili Stream, Ulukahiki Street and Kalaniana'ole Highway on the mauka side. The site abuts Ulupō Heiau State Historical Park and the Kūkanono slope to the northeast.

The location of this facility adjacent to the restoration ponds is designed to facilitate maintenance and management of the waterbird habitat. Kawainui's flood control capabilities are also managed from this station by maintaining flood control structures, monitoring the marsh's flood control capacities and water quality, and removing vegetation. This station would also support broader educational and research programs to improve understanding of native wildlife resources.



Kawainui - Hāmākua Master Plan
 Figure 2.10 - Conceptual Plan Subarea E - DOFAW Management & Research Station and Mokulana Peninsula

Over the years, the research station has expanded through the addition of temporary offices and storage structures (e.g. office trailers and metal shipping containers). A few permanent structures totaling about 6,000 square feet consist of a building used for research activities, an office building, a small storage building, and a new storage building planned to replace several shipping containers.

The proposed improvements would replace the temporary structures with permanent facilities to better support DOFAW operations. The DOFAW research station would be clustered within an approximately one-acre area of the site with facilities planned to accommodate up to 30 employees. About 3,000 square feet of new floor area would be added bringing the total operational space to about 9,000 square feet. New structures would include a building for operations, office supporting nursery operations, and a rest room with laundry building. The existing temporary office trailers and shipping containers would be removed. Covered parking is planned for vehicles, and a perimeter fence would be established around the operational portion of the site.

Other improvements would include greenhouses as part of a nursery program established for growing native Hawaiian wetland and lowland plants for restoration and reforestation efforts. An interpretive pavilion of about 350 square feet with rest rooms would be used for interpretive displays, educational or stewardship instruction, and to provide shelter from the elements. Wooden decks about 10 to 15 feet in diameter would be provided for viewing waterbirds and scenic resources associated with the restoration ponds, Maunawili Stream, and Kawainui. The viewing decks would be connected to a foot trail. An open-aired pavilion would be located near the restoration ponds for educational and stewardship programs.

As shown on Figure 2.10, foot trails are planned within open space area outside of DOFAW's operational area. Trails would connect to viewing decks and connect with the foot trail from Ulupō Heiau SHP. Separate areas are designated for vehicular parking for employees, maintenance vehicles, and visitors. Gates would be provided to prevent vehicular access during closed hours. DOFAW plans to discuss with the City adding a gate to the lower half of Ulukahiki Street to secure entry and access to the DOFAW station.

A 1.5-acre area situated at the west end of DOFAW's station is planned for passive outdoor recreation by the public. This area provides open space for picnicking and/or birdwatching, and would function as one of several trailheads for perimeter paths around Kawainui. A wooden shade pavilion of about 800 square feet would be provided along with parking for 15 vehicles, including handicapped parking. Additional space using a trailer would also be added here for other environmental research projects coordinated with DOFAW. From this area, the foot trail would continue west toward Mokulana peninsula. A pedestrian bridge would be needed to cross over Maunawili Stream.

Mokulana Peninsula

The Mokulana Peninsula encompasses an area of about 6.5 acres. Improvements at this location are intended to support educational and stewardship programs, particularly for the restoration ponds, along with passive outdoor recreational use. The site is presently overgrown with trees and other vegetation that would need to be trimmed and cleared to create open space. Upland reforestation and lowland vegetation restoration along the wetland would occur at this peninsula to gradually replace invasive vegetation with native vegetation.

As previously shown on Figure 2.10, the foot trail from DOFAW's management and research station would continue along Kalaniana'ole Highway through this area. Two small pavilions are planned along this trail to provide viewing opportunities of Kawainui and temporary shelter from the elements. The trail would then continue west toward the Kahaniki section of Kawainui.

Two existing driveway entrances serving this site would provide vehicular access. The entries would be gated to prevent access during closed hours. Pervious materials are planned for parking areas and driveways along with bioswales to minimize surface runoff. A program staging area consisting of compacted gravel is planned near the restoration pond. This multi-purpose staging area could be used for purposes such as: 1) the loading/unloading of student groups for educational programming and service learning activities; 2) providing stewardship volunteers with an area to park their vehicles; and 3) collecting green waste from maintenance activities for transport to the vegetation processing area. A small shed would be located near this program staging area for equipment storage along with a pavilion for educational and stewardship programs.

2.2.4.6 Subarea F: Hāmākua-Pu'uoehu

Figure 2.11 illustrates Subarea F consisting of the Hāmākua Marsh State Wildlife Sanctuary and the Pu'uoehu hillside situated mauka of Hāmākua Drive. The subarea encompasses about 90 acres and is under DOFAW jurisdiction. The concepts planned for this section include:

1. Improvements to support DOFAW's management of the Hāmākua Marsh Wildlife Sanctuary.
2. Upland reforestation of the Pu'uoehu hillside including a program trail to support these efforts.

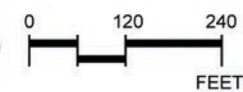
Hāmākua Marsh Wildlife Sanctuary

At Hāmākua, current wetland management and recovery efforts for endangered bird and plant species would continue, along with habitat improvement for migratory shorebirds. Management activities also include accommodating service-learning projects and other place-based educational programming with schools and non-profit organizations.



Kawainui - Hāmākua Master Plan
 Figure 2.11 - Conceptual Plan Subarea F - Hāmākua and Pu'uoehu

Kailua, O'ahu



The existing wetland would be expanded an acre on the southern end to increase the suitable waterbird habitat. Trees and vegetation would be removed and the mauka boundary would be excavated to lower the elevation so that water and wetland vegetation can expand into this area. Wetland enhancement is proposed for about two acres along the remaining mauka boundary proceeding north, as shown on Figure 2.11.

Reforestation is proposed in upland areas outside the wetland to replace non-native invasive vegetation with native Hawaiian species. Areas would be mowed to clear vegetation, creating open grassed areas to support DOFAW management and operational activities as well as educational or cultural programs. An existing unpaved maintenance road routed along the wetland would be realigned further inland and extended to Wetland Basin D to support vehicle access for maintenance and management operations. The maintenance road could also function as a foot trail for educational programs and stewardship activities.

The existing unpaved area at the site's gated entrance would be improved to create a program staging area. The area would be leveled and a compacted gravel surface provided to serve as vehicle parking. This area would be used for loading/unloading groups for educational programming, service learning activities, and program areas for stewardship volunteers. A locked 200 square foot rest room and storage facility for DOFAW equipment would be located within this staging area. Drainage improvements around the maintenance road are also proposed.

The Hawaiian Electric Company has two utility poles serving electrical sub-transmission lines along Kawainui Canal within the wetland. DOFAW would like to have these utility poles relocated outside of the wildlife sanctuary, and would discuss the feasibility of their relocation with the utility company.

Pu'uoehu Hillside

The Pu'uoehu hillside functions as a watershed for Hāmākua, and improvements are intended to continue supporting this function. Upland forest restoration work is planned over time to gradually replace existing non-native invasive vegetation with native vegetation.

To support reforestation efforts and management of this hillside, two foot trails are planned. One trail would generally extend up to and along the summit of Pu'uoehu while a second trail would extend about halfway up and along the hillside. The trails are intended to support DOFAW access along the hillside and for conducting reforestation activities. Trails could also be used for educational or stewardship program activities.

2.2.5 Project Phasing and Estimated Costs

Proposed improvements can be implemented around the end of 2017 when the environmental review process has been completed and the land use entitlements are obtained. Other ministerial permits (e.g., building and grading permits) would be obtained as part of the design and construction phase as the various master plan components are implemented.

The master plan concepts described and evaluated in the EIS are anticipated to occur over a 15-year timeframe. The selection and timing of improvements would be determined by DOFAW and DSP, subject to a number of factors. These factors include, but are not limited to, agency priorities, staff requirements, and the availability of funding provided by the Legislature. Priorities may occur over time as circumstances change or unforeseen opportunities arise.

Estimated costs for the master plan improvements would be developed during the preparation of the Draft EIS.

2.2.6 Listing of Permits and Approvals

A listing of required discretionary land use approvals and ministerial permits for this project is provided. Some permits, such as the Department of Army Permit, would only be applicable for certain proposed improvements (e.g. boardwalk across wetland).

Federal Permits and Approvals

Department of the Army Permit

- Section 106, National Historic Preservation Act consultation
- Section 7, Endangered Species Act consultation
- Coastal Zone Management federal consistency determination

State of Hawai‘i Permits and Approvals

Department of Health

- Construction Noise Permit
- National Pollutant Discharge Elimination System (NPDES) Individual Permit - Construction Activities

Board of Land and Natural Resources

- Conservation District Use Permit

Department of Land and Natural Resources

- Chapter 6E, HRS, Historic Preservation Review

City and County of Honolulu Permits and Approvals

Honolulu City Council

- Special Management Area Use Permit (Major)

Department of Planning and Permitting

- Grading, Grubbing, and Trenching Permits
- Approval of Sewer Connection Application

2.3 ALTERNATIVES CONSIDERED

Chapter 343, HRS, the Hawai‘i Environmental Policy Act, requires that an EIS include a discussion of alternatives to the improvements proposed under this project. The following alternatives to the project identified thus far would be evaluated under the Draft EIS. Other prudent and feasible alternatives that may be identified during the EISPN consultation process would also be considered.

1. No Action Alternative
2. Resource Management Activities
3. Variations in Public Access
 - a. Education Center
 - b. Hawaiian Cultural Presence
 - c. Extent of Pedestrian Paths

Alternative No. 3, Variations in Public Access, reflects input received from various stakeholders and the public during the planning process developing the draft master plan, including the Ho‘olaulima organization’s *Interpreting Kawainui-Hāmākua: Recommendations for the Kawainui Master Plan Update* (July 2012) document and the Kailua Neighborhood Board’s plan for Kawainui. In summary, there were a number of alternatives considered and debated by the public, particularly in the “Variations in Public Access” category.

2.3.1 No Action Alternative

The No Action Alternative is a scenario representing a baseline of future environmental conditions without the proposed project. This baseline would be used to assess and evaluate probable impacts or changes resulting from the proposed project.

The No-Action Alternative would entail a continuation of existing conditions and activities within the project area along with implementation of improvements already proposed and entitled. Ongoing resource management activities within Kawainui and Hāmākua would continue by DOFAW that includes wetland restoration, upland reforestation, improvements supporting maintenance and operations (e.g. fencing), and educational programming. Within DSP

jurisdictional areas, activities would include continued management of areas and cultural practices as permitted.

Other initiatives that have already obtained land use entitlements could be implemented under the No Action Alternative, such as park improvements at Kawainui SPR; Kalāheo Section (Gateway Park project). The Draft EIS would discuss activities and improvements currently permitted in greater detail.

2.3.2 Resource Management Activities

This alternative is limited primarily to improvements supporting continued resource management activities, which predominantly includes work conducted by DOFAW. Improvements would consist of continued wetland restoration, upland reforestation, and resource management activities within both Kawainui and Hāmākua. This includes restoration improvement plans for areas extending beyond that already approved such as the 80-acre Kahanaiki restoration project area (HHF, 2012) and 680 acres under CDUP OA-3068, such as at Wai‘aui. Improvements to the Kawainui management and research station, staging areas and accessory facilities (e.g. pavilion, bathrooms) would be constructed to support current and expanded educational programs as part of DOFAW’s resource management activities and agency mission.

This alternative would not include new improvements that have not already been entitled such as the educational center and new areas to establish a permanent Hawaiian presence and facilities to support cultural practices and activities. Most of these other improvements occur within DSP jurisdictional lands, and effect public access and outdoor recreation.

The feasibility of this alternative would be address in the Draft EIS. Without improvements to enhance public outdoor recreation, the State would not meet LWCF Section 6(f) requirements. Elimination of the proposals to establish a permanent Hawaiian cultural presence would ignore stakeholder input during the planning process, falling short of meeting the mission of DOFAW and DSP to manage and protect cultural resources and support Hawaiian cultural practices.

2.3.3 Variations in Public Access

This alternative addresses the non-resource management activities proposed under the project. The variations include: 1) different locations within Kawainui for an education center; 2) alternatives for establishing a permanent Hawaiian cultural presence; and 3) the extent of pedestrian path routes and support facilities.

The variations would be limited to lands within the Kawainui-Hāmākua project area. These public lands are already under the control of DOFAW and DSP, and can be utilized to fulfill the project objectives to 1) fulfill the agency mission and responsibilities; 2) provide environmental

stewardship; 3) promote cultural preservation and stewardship; and 4) provide opportunities for public access, education and outdoor recreation.

2.3.3.1 Education Center

The 1994 master plan identified alternative locations for a visitor/education center that were considered during that planning process. Potential sites included an area near the corner of Kapa‘a Quarry Road and Kalaniana‘ole Highway and at the Mokulana Peninsula. Other site locations were at the Kawainui State Park Reserve (Kalāheo Section) and a location along Kahanaiki. The size of the proposed educational center is based on program needs and it would support visitor orientation and the outdoor classroom activities.

2.3.3.2 Hawaiian Cultural Presence

Alternative locations within Kawainui were evaluated for traditional Hawaiian land use activities and the perpetuation of traditional Hawaiian cultural practices and studies. Because lands acquired with LWCF funding assistance are intended for public outdoor recreation, they are not optimal for cultural activities unless they can be incorporated into a public interpretive program that includes passive recreational elements, such as the trails proposed at Ulupō Heiau and the Nā Pōhaku area.

2.3.3.3 Extent of Pedestrian Paths and Support Facilities

During the planning process, there were differing opinions on the extent of pedestrian paths and trails, and on the number and type of accessory facilities (e.g. pavilions, bathrooms, viewing platforms) that are appropriate. Alternatives to the proposed project, specifically fewer pedestrian paths, trails and facilities, would be evaluated for feasibility and practicability. The evaluation would also need to consider whether the alternatives meet federal LWCF requirements for public access and recreation.

CHAPTER 3: NATURAL ENVIRONMENT



Kawainui-Hāmākua is located in the windward lowlands climatic region on the Island of O‘ahu. This climatic region is characterized by its comparatively mild temperatures, moderate rainfall pattern, and frequent trade wind showers. Historic data from a recording station in Kailua shows annual temperatures range from a low of 63 degrees to a high of 76 degrees Fahrenheit throughout the year. Annual rainfall averages about 119 inches per year making this district wetter than other regions. Historic monthly average rainfall varies from a low of about 6.5 inches during the summer (June) to a high of 12.5 inches during fall (November) and spring (March) periods (WRCC, 2010).

3.1 BIOGEOGRAPHY, TOPOGRAPHY AND SOILS

The Island of O‘ahu was created by three volcanoes; the oldest Ka‘ena volcano (4-5 million years) that is now submerged off Ka‘ena Point, the Wai‘anae volcano (3-4 million years) on the west side, and the youngest Ko‘olau volcano (2-3 million years) on the east. All of these volcanoes have been subject to erosion by wind, rain, surf, and catastrophic collapses with portions of the Wai‘anae and Ko‘olau caldera falling into the ocean and leaving the two existing mountain ranges. Kawainui-Hāmākua is located within the former caldera of the Ko‘olau volcano along the windward slopes of the Ko‘olau Range.

3.1.1 General Biogeography

Existing Conditions

Kawainui started as a basin during the Pleistocene ice ages (10,000 BC) created by receding sea levels that promoted valley deepening along the windward slopes of the Ko‘olau volcano. Rising sea level then flooded the valley and created an embayment. A coral reef community developed within the embayment, and reef growth that proceeded fastest near the mouth of the bay eventually reached and maintained itself near the water surface as a barrier reef. The lagoon created behind this barrier reef was the basin that would ultimately transform into Kawainui.

Wetlands developed from infilling of this geologic basin that were initially open water ponds. With the basin’s surface hydrology being altered, a vegetation-covered marsh replaced the open water. Sediment accumulating in Kawainui or emergent vegetation creeping in from the margins created peat, and facilitated this marsh’s succession into a wetland combined with increasing dryland and upland areas (Oceanit, June 2006).

Presently, Kawainui is an environment in flux showing evidence of transition due to both the process of terrestrialization along with transition into a bog within certain areas.

Terrestrialization is the process where an open body of water such as a marsh transforms into dryland or terrestrial forest. The middle of the marsh appears to be forming a stable bog habitat, while around the perimeter of the marsh, terrestrialization is occurring with succession towards upland and terrestrial forest habitats.

Hāmākua was undergoing similar changes with introduced vegetation such as California Grass dominating that marsh environment, while nearby development of Kailua town has introduced additional sediment into Hāmākua. However, DOFAW's wetland restoration work and management of surrounding upland areas of Hāmākua is reversing this trend and restoring this wetland habitat.

Potential Project Impact

Implementation of the project recommendations would have a positive effect by reversing the current process of terrestrialization at Kawainui. Wetland restoration activities proposed would create more open water areas by removing invasive vegetation and the mat of peat, create mudflats, and restore native wetland vegetation. These improvements would restore habitat for endangered waterbirds. Upland reforestation improvements should similarly have a beneficial effect by replacing invasive vegetation with native vegetation. Upland drainage improvements would mitigate erosion and reduce soils from discharging into the wetland. Continued management and maintenance activities along with additional improvements proposed at Hāmākua and the recently acquired Pu'uoeu hillside would support these wetland and upland habitats. Further discussion of effects on the general biogeography with the project area from proposed improvements would be discussed in the Draft EIS.

3.1.2 Topography

Existing Conditions

Elevations within the project area vary due to the large area covered, ranging from sea level (within wetland areas) up to about 100 feet above mean sea level (AMSL) along Kapa'a Quarry Road. The Pu'uoeu hillside ranges in elevation from about 25 feet to 280 feet AMSL at the top of the ridgeline. The topography of lower elevations of Kawainui are relatively flat, which is characteristic of wetland areas within the alluvial plain.

Significant topographic boundaries near the project area include Oneawa Hills on the west and Kūkanono slope on the east. Oneawa Hills rises to 995 feet AMSL to the Ulumawao summit. Elevations along the Kūkanono slope range from 75 feet AMSL to 5 feet AMSL at the fringes of the marsh with slopes of 30 percent or more in some places. Kapa'a Quarry Road runs to the west and north of the project area ranging from 60 feet at Le Jardin Academy to 11 feet AMSL at

the intersection with Mōkapu Boulevard. Marshlands to the east and south of Kapa‘a Quarry Road slope by as much as 40 percent. Hāmākua Marsh is situated 1.5 meters AMSL with the Pu‘uoeahu hillside located just west of the project area sloping gradually to a height of 315 feet AMSL (U.S. Geological Survey 2003).

Potential Project Impact

Project improvements should not significantly alter the existing topography within the project area. Wetland restoration improvements would involve the removal of invasive vegetation and occur within the top foot of the surface. Upland reforestation efforts would similarly have minimal effect because the existing topography should essentially remain the same. The creation of some terraced walls is planned within a gully as part of drainage mitigation and would have a positive effect to reduce erosion occurring in that area.

No large-scale grading activities are planned as part of the upland reforestation. Minor grading would be required in certain portions of this area to accommodate a maintenance path for DOFAW vehicles. There are no unique or significant geological land formations present on the property that could be adversely affected by these activities. No major cut or fill activities are anticipated.

3.1.3 Soils

Existing Conditions

U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) has classified several soil types within the Kawainui-Hāmākua area (USDA, NRCS 1973). Marsh (MZ) soils comprise the majority of Kawainui and the entirety of Hāmākua. These soils consist of wet, periodically flooded areas and are covered primarily by grasses, bulrushes, and other herbaceous plants. Hanalei Silty Clay, 0 to 2 percent slope (HnA) and Pearl Harbor clay soils are also common in Kawainui. Pu‘uoeahu Hillside is comprised of Papa‘a clay, 35 to 70 percent slope (PYF) and Papa‘a clay, 20 to 35 percent slope soils.

Potential Project Impact

The project improvements would not adversely impact soils within the project area. Restoration activities would focus on removing existing invasive vegetation. Upland drainage culvert improvements and the construction of structures and trails would involve temporary land disturbance. Standard construction best management practices would be utilized to mitigate short-term soil erosion during construction, and may include stationing water trucks nearby during construction to provide sprinkling in active areas, and use of temporary silt fencing, sand bags or screens. Actual implementation measures would be developed during project design.

In the long term, the proposed drainage culvert and reforestation improvements would reduce ongoing soil erosion and have an overall positive impact. The potential for soil erosion caused by proposed structures, boardwalks and trails would be addressed in the DEIS.

3.2 NATURAL HAZARDS

3.2.1 Seismic Hazards

Existing Conditions

The U.S. Geological Survey's *Atlas of Natural Hazards in the Hawaiian Coastal Zone* (USGS, 2002) assigned seismic hazard intensity ratings for all islands on a scale from "1" to "5" with "1" representing lowest hazard and "5" the highest. The southern half of O'ahu extending from Mākaha east around Diamond Head and Makapu'u and north up to Kāne'ohe Bay was assigned a volcanic/seismic risk ranking of "3" due the region's proximity to the Moloka'i Seismic Zone. The remainder of the island is ranked "2" with respect to volcanic/seismic hazard (USGS, 2002). The Kawainui Marsh project area is situated within the southern half of O'ahu and has a risk ranking of "3" similar to other uses in the eastern half of the Windward district. The project area's earthquake hazard risk is not significantly higher than other areas of O'ahu.

Potential Project Impact

The proposed master plan activities would not be impacted by or have an impact on seismic hazard. Susceptibility of structures and paths to earthquake damage would be no different than the existing structures in the surrounding area.

3.2.2 Hurricane Hazards

Existing Conditions

Hurricanes are tropical storms with winds greater than or equal to 74 miles per hour. They have affected every island in the State and can cause major damage and injury from high winds, marine over-wash, and heavy rains that result. Most hurricanes affecting the islands have historically focused on the island of Kaua'i (FEMA, 1993).

Potential Project Impact

Should a hurricane make landfall on O'ahu, it is anticipated that sufficient warning would be available and that any visitors to the area would be cleared and directed to a safe location. Hurricane damage is not anticipated to be higher in the project area compared to surrounding areas. None of the proposed structures are intended for permanent habitation or occupancy, and no significant danger to the public is anticipated.

3.2.3 Flood Hazards

Existing Conditions

The Federal Emergency Management Agency (FEMA) flood hazard area classifications are utilized to gauge flood hazard risk for the project area. Figure 3.1 highlights the flood hazard designation within the project area. The majority of Kawainui is within the Zone A, special flood area subject to 100 year flood (i.e., inundated by 1% annual chance flooding) and for which no base flood elevation has been determined.

Areas north, east, and south of the project area are primarily within the Zone X, areas outside the 100-year floodplain. Easternmost portions of the project area are makai facing, and are within Zone VE, an area subject to inundation by the 1% annual chance flooding with additional hazards due to storm-induced velocity wave action. The Pu‘uoehu Hillside portion of the Hāmākua area is classified as Zone X, an area outside the 100 year flood zone. Hāmākua itself is within the Zone AE flood zone, an area inundated area and is within the 100 year floodplain.

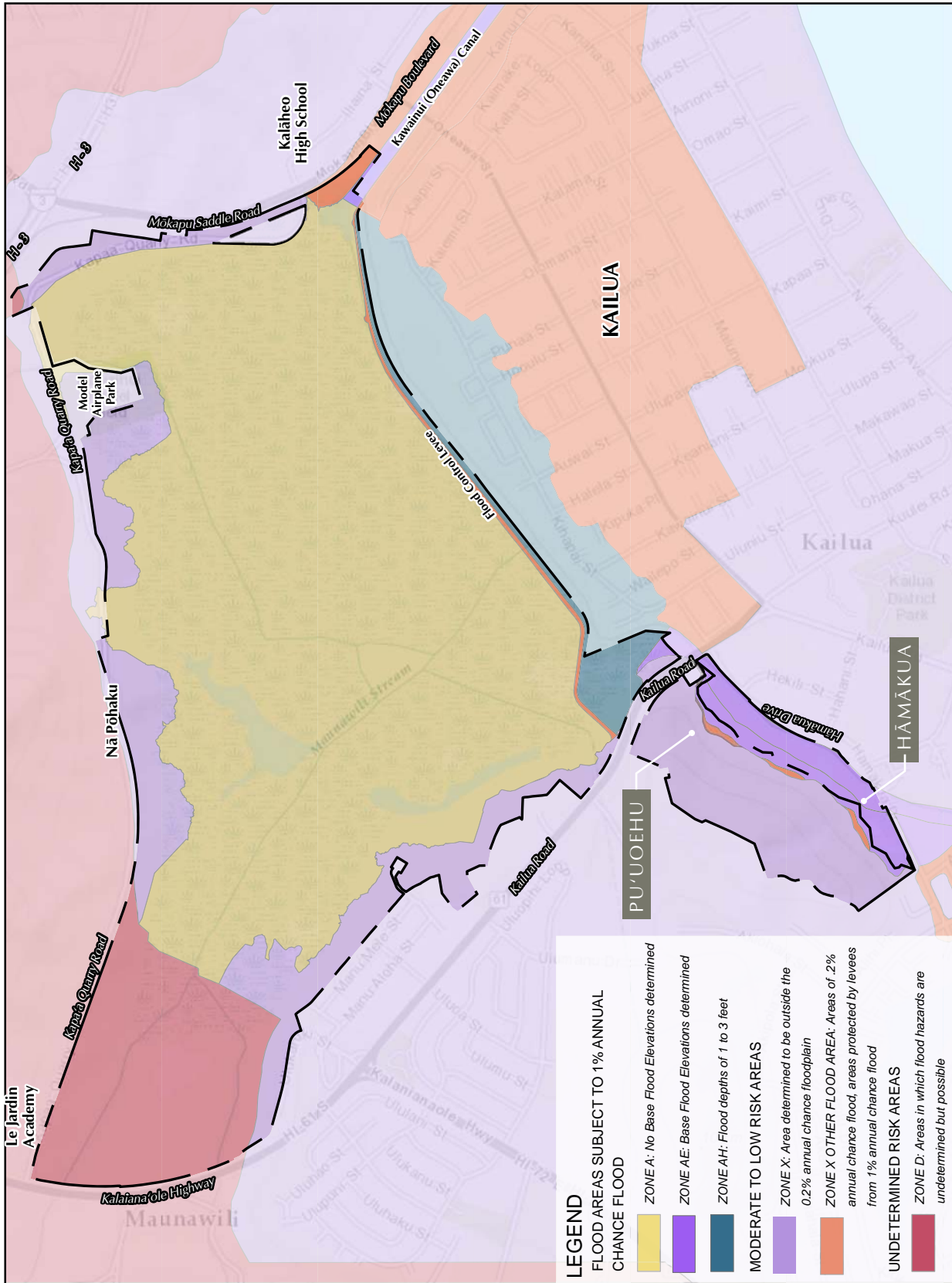
Potential Project Impact

No adverse flooding impacts are expected. The wetlands of the project area serve as a natural retention basin for flood control, and would continue to serve this purpose under a severe flood. The improvements to clear invasive vegetation and increase open water area are intended to increase the wetland’s flood water retention capability, and would reduce the flood hazard. The vulnerability of proposed structures to flooding would be addressed in the DEIS.

3.2.4 Tsunami Hazards

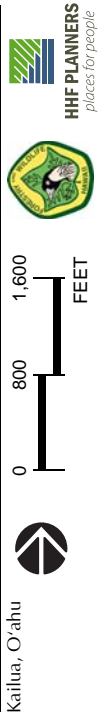
Existing Conditions

Tsunami manifest themselves as large breaking waves, often largest around headlands where they are concentrated by wave refraction, or as sea levels that rise rapidly like a flooding tide. The coastline of the Hawaiian Islands is under continuous threat of tsunami inundation because the Pacific basin is one of the most geologically active regions on Earth. In March 2011, a tsunami was generated from a large earthquake generated off the coast of Japan which affected O‘ahu. No known damages to the project area resulted from this tsunami. The project area is outside the City’s designated tsunami evacuation zone.



Source: Federal Emergency Management Agency, FIRM 15003C0290H

Kawainui - Hāmākua Master Plan
Figure 3.1 - Flood Hazard Zones



In 2015, the City unveiled a new set of “Extreme Tsunami Evacuation Zone (XTEZ)” maps, which outline refuge areas and routes in high impact, worst case scenarios. These maps do not replace the current tsunami evacuation zone maps, but are intended to add a second zone should an extremely large (9M+) earthquake occur in the Aleutian Islands, generating an especially destructive tsunami in Hawai‘i. The project area is as part of the extreme tsunami evacuation zone, as is most of Kailua.

Potential Project Impacts

The project area is not within the current City tsunami evacuation zone, and proposed improvements should not be affected by a tsunami. In the event of an extreme tsunami, all of Kailua and surrounding windward O‘ahu communities could be impacted.

3.3 HYDROGEOLOGICAL RESOURCES

The State DLNR, Commission on Water Resource Management (CWRM) has established groundwater hydrologic units to provide a consistent basis for managing groundwater aquifers. A coding system has been established under the State’s Water Resource Protection Plan that classifies and describes the islands aquifers. The system is comprised of Aquifer Sectors with smaller Aquifer Systems located within these sectors (CWRM, June 2008).

The project area is within the Windward Aquifer Sector (306) which is further divided into four aquifer systems. These aquifer systems include the Ko‘olauloa, Kahana, Ko‘olaupoko, and Waimānalo aquifers. The project area is located within the Waimānalo Aquifer system (30604) which primarily contains high-level groundwater (CWRM 2008). This system spans from the ridgeline of the Ko‘olau Mountains to the shoreline and in a south to north direction from Waimānalo to the beginning of Kāne‘ohe. The Windward aquifer has an estimated sustainable yield of 91 million gallons per day (mgd). The Waimānalo Aquifer system has a sustainable yield of 10 mgd. Kawainui Marsh serves as a basin for surface water flow into the wetlands and accommodates some groundwater recharge of the aquifer system.

3.3.1 Groundwater Hydrology

Existing Conditions

The most abundant form of groundwater on O‘ahu is the basal aquifer, which is a lens of fresh to brackish water floating on sea water. The Kawainui and Hāmākua areas are above the Waimānalo aquifer, which is subdivided into two layers with distinct hydrogeological characteristics (DOH Aquifers 2011). The uppermost aquifer is characterized by sedimentary, non-volcanic geology. This aquifer is currently used with low salinity and is ecologically important. This water is irreplaceable and highly vulnerable to contamination. The lower aquifer is characterized by basal, confined geology where the aquifer is bounded by impermeable

dike geology. These waters are currently used for drinking and possess fresh water salinity. The waters are considered irreplaceable with low vulnerability to contamination.

Groundwater in the Pu‘uoeu hillside is stored within an aquifer characterized by dike compartment geology. These freshwaters are unconfined and located within the upper surface of a saturated aquifer. These water resources are not in contact with seawater and possess freshwater salinity. The waters are currently used for drinking, have a high vulnerability to contamination, and are considered irreplaceable.

Potential Project Impact

Proposed master plan improvements should have minimal effect on the underlying aquifer. Improvements consist predominantly of wetland restoration and reforestation. Proposed structures are small scale with low intensity use. Potential project impacts on hydrogeological resources would be assessed in the Draft EIS.

3.3.2 Watershed, Surface and Coastal Waters

Existing Conditions

A watershed is an area of land enclosed by mountain ridges that catches and collects rainwater to continually replenish ground water supplies. On O‘ahu, water from the ocean is heated by the sun and is blown inland by trade winds. As moisture-laden air approaches the high mountain ranges, it rises, cools and condenses, causing rain on the island. The watershed is also synonymous with the island’s rain forest.

The State DLNR, Division of Aquatic Resources (DAR), has established watershed areas for the Island of O‘ahu. Kawainui is located within the Kawainui watershed (DAR Watershed Code 32013) which has an area of 11.3 square miles. The Kawainui Watershed extends from the shoreline on the northern end of Kailua Bay, up to Maunawili and Olomana, and west to the Ko‘olau Mountains. Kahanaiki, Maunawili, and Kapa‘a Streams are surface waterbodies associated with this watershed that are relevant to the project. Kawainui is within the lower region of the Kawainui watershed (DAR 2008).

Hāmākua is located within the Ka‘elepulu watershed (DAR Watershed Code 32014) which has an area of 4.6 square miles. The Ka‘elepulu Watershed encompasses the slopes of Mount Olomana and the neighborhood of Enchanted Lake, extending south towards the Lanikai neighborhood. Hāmākua is located in the northern most portion of the watershed. Kawainui Stream runs just east of Hāmākua and is the waterbody in this watershed most relevant to the project. Kawainui Stream is also referred to as Kawainui Canal and Hāmākua Canal in existing research (McGuire 2006, DOH 2007, DOH 2012). The waterbody would be referred to as Kawainui Stream for the purposes of the EIS.

Kawainui functions as a flood control basin, protecting the low-lying areas of Kailua Town and the Coconut Grove subdivision that experienced flooding in 1988 when floodwaters breached the levee. Kawainui generally drains in a south to north direction toward the Kailua Bay shoreline. Maunawili, Kahanaiki, and Kapa‘a Streams are the primary sources of surface water flowing into Kawainui. Other inflow sources come from peripheral drainages, smaller, non-perennial streams, and surface runoff from upland areas. Drainage systems within Kapa‘a Quarry Road along with Kalaniana‘ole Highway also carry surface runoff into the marsh and Kahanaiki Stream. Water from the marsh discharges into Kawainui (Oneawa) Canal, which eventually drains into Kailua Bay. Waters from Coconut Grove and Kailua Town flow into Kawainui Stream traveling seaward and connecting with Ka‘elepulu Stream. These waters finally meet the ocean at Kailua Beach Park.

Prior studies provide estimations of inflow into Kawainui. They range from a low of 6.8 million gallons per day (mgd) (Drigot et al, 1982) to a high of 9.5 mgd (WOA, 1994) from Maunawili, Kahanaiki, and Kapa‘a Streams. Outflow from these streams is estimated at approximately 4.6 mgd through evapotranspiration and 8.0 mgd from groundwater seepage and surface outlets (COE 2008). Of this total, 6.3 mgd discharges into Kailua Bay through the Kawanui Canal and 3.2 mgd was lost to evapotranspiration (Wil Chee, 2008).

Potential Project Impact

Proposed restoration improvements including removal of invasive species, upland reforestation, and erosion control efforts are anticipated to improve the water transport function of the project area. The impact of project improvements on this ecological function would be assessed in detail in the Draft EIS.

3.3.3 Streams

Existing Conditions

Figure 3.2 shows streams within the project area, which include Kahanaiki, Maunawili, Kapa‘a, and Kawainui Streams. Kawainui Marsh receives drainage from an area of roughly 25 km² within the Kailua watershed. The majority of this input is from Maunawili Stream (14.5 km²), Kahanaiki Stream (4.9 km²), and Kapa‘a Stream (3.1 km²).

Kahanaiki Stream is a perennial stream that meanders south to north through the project area. This stream is generally shallow at less than a foot deep in most areas. Invasive vegetation has encroached on Kahanaiki Stream, reducing its water flow and has allowed the formation of a thick peat layer in the surrounding wetland.

Maunawili Stream runs in a south to north direction through the project area and is similar to Kahanaiki Stream. This stream is shallow (one to three feet deep) and varies in width. While invasive vegetation has reduced the flow of water in this stream, the scope of encroachment is comparatively less than Kahanaiki Stream since the area surrounding the stream consists of open grassland. Maunawili and Kahanaiki Streams converge and flow south into the open water areas of Kawainui.

Kapa‘a Stream is a perennial stream that runs for 1.9 miles before terminating into Kawainui Marsh (SD&C 2011). The stream flows discontinuously from the southwest slope of Mount Ulumawao in a northeast direction alongside a number of industrial uses before entering the northeastern end of Kawainui through a pond like feature passing beneath Kapa‘a Quarry Road (DOH 2007). Uses surrounding Kapa‘a Stream range from an undeveloped gulch area populated by invasive vegetation at the stream’s southern end to industrial uses like the Ameron Quarry.

Kawainui Stream was formerly the drainage outlet for Kawainui and flowed along its present course past Hāmākua to Ka‘elepulu Stream (AECOS 1992). However, the natural flow of the stream was altered when the Kawainui flood control levee was developed, separating Kawainui and Hāmākua. Marsh waters now flow toward the ocean through a canal running parallel to Mōkapu Boulevard. Kawainui Stream became separate from Kawainui and is no longer fed by marsh waters. The stream is instead fed by stormwater runoff, with stream waters traveling south and east toward Ka‘elepulu Stream before flowing into Kailua Bay (McGuire 2006).

Potential Project Impact

The proposed clearing of invasive vegetation from the wetland areas would have a long-term positive impact on stream flow. This would be discussed further in the Draft EIS

3.3.4 Wetlands

Existing Conditions

Figure 3.2 also showed the various wetland types in the project area. In general terms, wetlands are lands where saturation with water is the dominant factor determining the nature of the substrate, and the types of plant and animal communities living in and on the substrate. Wetlands are considered one of the most biologically productive ecosystems based on their vegetative productivity and species diversity. They perform several important functions including floodwater storage and water quality improvement while serving as a habitat for wildlife. Kawainui Marsh’s wetlands store water and then slowly release it. This slows the momentum and erosive potential of water flow that could have an adverse effect on downstream uses. It also facilitates ground water discharge. By slowing runoff, transported sediments have time to settle, filtering out nutrients and other pollutants.

The wetland information on the Figure 3.2 is based on geospatial data from the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI). The majority of the wetland area is classified as freshwater emergent wetlands with smaller freshwater pond areas scattered throughout the project area (Hawai‘i Wetlands). The freshwater emergent wetland areas are dominated by trees, shrubs, and mosses that are present for most of the growing season. The wetlands possess persistent vegetation that normally remains standing until the beginning of the next growing season. Kawainui freshwater emergent wetlands differ by the quantity of freshwater present in the marsh throughout the year.

Freshwater ponds in the project area are classified as non-tidal wetlands occurring in tidal areas with saline concentrations below 0.5 parts-per-thousand (ppt). These habitats are dominated by plants that grow principally on or below the surface of the water. Freshwater pond areas also differ by the amount of freshwater present in the marsh throughout the year.

In 2005, Kawainui was designated as a “Wetland of International Importance” under the Ramsar Convention. This designation underscores the need for conservation of this wetland resource. Hāmākua is an equally important wetland within the project area and was designated as a State Wildlife Sanctuary in 1997. This wetland is also classified as a freshwater emergent wetland and is seasonally flooded.

Potential Project Impact

Wetland restoration improvements proposed by the master plan would have a significant positive impact on the health, function and value of the wetland areas. Removal of invasive vegetation and the extensive floating mat of peat would increase open water areas and improve stream flow through the area. Increased open water areas and the creation of seasonal mud flats would provide better habitat for endangered waterbirds. These improvements would support the Ramsar Convention designation as a Wetland of International Importance, and support the State’s designation of the area as a State Wildlife Sanctuary. The positive impact of the project improvements on the wetland would be discussed further in the Draft EIS

3.3.5 Water Quality

Existing Conditions

Wetlands play a major role in maintaining the quality of stream and coastal water resources. Previous studies of water quality within the project area have confirmed the important role that Kawainui plays in maintaining the quality of water resources in the area. Water quality studies by AECOS in 1981 and 1989 for Kahanaiki and Maunawili Streams highlight the marsh’s pollution retention function (COE 2008). These studies determined that the marsh retains nutrients and suspended solids by slowing the flow of runoff, allowing pollutants to settle, decompose, and oxidize so wetland plants can absorb them. Recent research into Maunawili

Stream's upstream and downstream waters by Oceanit Laboratories Inc. supports these earlier findings.

Anthropogenic impacts (i.e., caused or influenced by humans) have great potential to adversely impact water quality within the area. Land uses within the larger Kawainui watershed include agricultural uses, a golf course, the Maunawili and Kūkanono residential communities, and a number of industrial uses near Kapa'a Quarry Road. Stormwater runoff from these areas results in the transmission of sediment, fertilizer, pesticides, and other pollutants into Maunawili, Kahanaiki, and Kapa'a Streams. Other commercial and industrial uses along Kawainui Stream are sources of point pollution into the marsh. Ultimately, these pesticides, nutrients and pollutants flow directly into Kawainui (DOH, 2007), and ultimately into the coastal waters of Kailua Bay.

Project area waters flow into Kailua Bay, which is classified by the State of Hawai'i as a Class A marine water. Class A waters are intended for recreational and aesthetic enjoyment. Previous research by the University of Hawai'i Water Resources Research Center (Krock and Fujioka 1993) assessed the impact that the project area streams have on Kailua Bay nearshore water quality. The study noted that the presence of waterborne bacteria was highest near Kawainui Canal and Ka'elepulu Stream discharge points, decreasing as one traveled further from these areas. It found high bacteriological conditions at areas where Kawainui and Ka'elepulu Stream discharge due to the presence of sewage, animal feces, and soil in these waters. The study concluded that efforts to improve coastal water quality should focus on improving the quality of these stream waterbodies.

Potential Project Impact

The overgrowth of invasive vegetation within the wetlands of the project area, coupled with poorly functioning drainage structures in surrounding upland areas has significantly compromised the wetland's ability to filter pollutants and maintain surface and coastal water quality.

Proposed restoration activities such as removal of invasive vegetation and the extensive peat mat would improve the wetland's function as a retention area and enhance its ability to filter pollutants from upland areas. This would have a substantial positive impact on water quality. Improvements to drainage culverts located on Kapa'a Quarry Road and reforestation would further reduce non-point source pollution. Ultimately, this would have a positive impact on the water quality of Kailua Bay. These impacts would be discussed further in the Draft EIS.

3.4 BIOLOGICAL RESOURCES

The project area is a habitat for endangered animal and plant species. The project area is a habitat for four endangered Hawaiian waterbird species, and multiple migratory bird species and two native aquatic organisms. There is also a variety of non-native plants and animals throughout the project area.

3.4.1 Botanical

Existing Conditions

Based on early descriptions of the area, Kawainui at one time encompassed about 400 acres of open water. This has been reduced to only about 40 acres, and most of the open water is now covered with vegetation supported by a floating mat of peat. The peat layer has an average thickness of 4 feet, but is up to 8 feet thick in some areas. Much of the original wetland vegetation has been overtaken by alien (non-native) species (HHF, 2012).

According to a botanical survey conducted in 2006, native wetland plant species cover a little over one half of the project area. Native plants in the project area are primarily two indigenous species: Saw-grass (*Cladium jamaicense*) and Neke fern (*Cyclosorus interruptus*) (Oceanit Laboratories, Inc., June 2006). Native vegetation can also be found in the Nā Pōhaku o Hauwahine Section of Kawainui State Park Reserve and Ulupō Heiau State Historical Park due to restoration work by local organizations.

Non-native plants found in the project area include invasive trees, sedges, and grasses, such as California grass (*Urochloa mutica*), Water Hyacinth (*Eichhornia crassipes*), Kariba Weed (*Salvinia molesta*), and Cattail (*Typha latifolia*), as well as various trees such as the Hawaiian dwarf umbrella plant (*Schefflera*) and Fiddlewood. Over time, the proliferation of non-native species has affected the marsh by reducing open water areas, intermingling with and crowding out native plants, and contributing to an accumulation of organic matter (peat). (Oceanit Laboratories, Inc., June 2006).

Potential Project Impact

As described in Chapter 2, proposed restoration would involve gradual removal of invasive vegetation along with dead vegetation, and restoration of native wetland vegetation. Within wetland areas, these activities would generally follow the ongoing restoration work being implemented by the State in the Kahanaiki Wetland Zone, and involve a combination of mechanical and chemical removal of the existing vegetation and peat mat. Staging areas would be established for temporary storage of biomass prior to transport to the vegetation processing site. These activities would have an extremely positive impact on native vegetation, and allow reestablishment of mud flat areas which serve as wetland habitat for endangered waterbirds. This

also enhances the wetland's functions and values, in support of the area's designation as a Wetland of International Importance under the Ramsar Convention.

In upland areas, proposed restoration activities are intended to reestablish a robust native upland forest in a cost-effective and practical manner. Due to the prevalence of non-native species, a hybrid ecosystem model would be implemented, aimed at gradually and selectively removing non-native species, allowing native and existing non-native species to mix in a transitional period. The Draft EIS would describe and address the anticipated impacts of these activities.

3.4.2 Avifauna and Fauna

Existing Conditions

The project area provides habitat for various migratory waterfowl, wintering shorebirds and a variety of resident and introduced bird species. Standing ponds, wet pastures, and open water areas are attractive habitat for migratory waterfowl during the rainy season. Migratory waterfowl are found within the small ponds in the wet pasture and the larger open water areas of the marsh during winter months.

Endangered Waterbird Species

The project area provides important habitat for four endangered species of native Hawaiian water birds. Kawainui and Hāmākua were identified by the U.S. Fish and Wildlife Service as a "primary habitat" for the recovery of these water bird species (FWS, May 2005). The four species of endangered Hawaiian waterbirds found in the project area are the Hawaiian stilt (*Himantopus mexicanus knudseni*), Hawaiian coot (*Fulica alai*), Hawaiian moorhen (*Gallinule chloropus sandvicensis*), and Hawaiian duck (*Anas wyvilliana*).

The ae'ō (Hawaiian stilt) is a slender wading bird that can use a variety of aquatic habitats but requires mudflats or marshlands with a shallow water depth and perennial vegetation that is limited and low growing. Suitable shallow habitat is limited in and around Kawainui, and State bi-annual waterbird counts have resulted in few stilt observations.

The 'alae ke'oke'o (Hawaiian coot) have a black head, a slate gray body with white under tail feathers, and a prominent white frontal shield and bill. Hawaiian coots prefer more open water. They would nest in fresh and brackish ponds, and construct floating nests of aquatic vegetation in open water or semi-floating nests anchored to emergent vegetation.

The 'alae 'ula (Hawaiian moorhen) is a dark gray bird with a black head and neck, with a distinctive red frontal shield. These birds are the most secretive of the native Hawaiian waterbirds, preferring to forage, nest and rest in dense late serial vegetation. Most birds encountered in open or exposed areas would quickly seek cover when disturbed.

The koloa maoli (Hawaiian duck) is one of two extant native duck species found in Hawai‘i and is closely related to the non-native mallard. Hawaiian ducks are now most commonly observed around open waterways and channels. The Hawaiian ducks have been declining primarily due to hybridization with mallard ducks (FWS 2009).

Mammals

A wide variety of mammals live within and around the project area, although none are threatened or endangered. Several of these species are predators to the endangered waterbirds. The small Indian mongoose (*Herpestes auropunctatus* or *javanicus*) is the most pernicious of the predators present within the marsh and a key predator to waterbirds. DOFAW implements a trapping program at Kawainui to try to keep the number of mongoose down. The roof rat (*Rattus rattus*) inhabits a wide range of environmental conditions, and has been identified as a predator of native birds.

Feral dogs (*Canis familiaris*) are present in the area intermittently and constitute a threat to ground-nesting birds. Due to the proximity of urban communities, domesticated dogs are present and pose a threat to waterbirds, particularly when dogs are walked through the marsh. Feral cats (*Felis catus*) are present within the marsh and surrounding area, and pose a threat to both ground nesting and arboreal nesting birds.

Feral pigs (*Sus scrofa*) can be found within the project area. The foraging habits of these animals can directly and indirectly affect native plant and animal species. Feral pig activity can reduce the abundance of native plant species, enhance conditions for the proliferation of invasive plants, and increase soil erosion. This contributes to habitat loss for endangered waterbird species.

Potential Project Impact

In its 2005 Recovery Plan for Hawaiian Waterbirds, the USFWS identified Kawainui and Hāmākua as a “primary habitat” for the recovery of endangered waterbird species. The master plan’s proposed wetland restoration activities would enhance the nesting and foraging habitat for native waterbirds by removing the overgrowth of invasive plant species, creating seasonal mudflats, and increasing open water areas. Predator control by fencing and other management actions would reduce the ongoing threat to nesting birds from mongoose, dogs, feral cats, feral pigs, and human intrusion. These activities are also consistent with DOFAW’s Kawainui Restoration Area Management Plan and would have a long-term positive impact.

3.4.3 Aquatic Resources

Existing Conditions

The wetlands and streams of the project area support a variety of introduced and indigenous aquatic wildlife. In the upper reaches of the marsh, Kahanaiki and Maunawili Streams are dominated by introduced species of freshwater fish. Native fish have been found in the marsh in low densities, and include ‘o‘opu nakea, the endemic goby (*Awaous guamensis*), ‘o‘opu naniha, an indigenous goby (*Stenobobius genivittatus*) and ‘o‘opu okuhe, an endemic eleotrid (*Eleotris sandwicensis*).

The project area provides a passage for indigenous goby and endemic goby and eleotrid species that migrate from ocean and freshwater areas using marsh waterways. Currently, the migrations of these species are hampered by the thick mat of floating peat that extends over much of the marsh.

There are several introduced species of invertebrates within the marsh, including prawns, crayfish and snails. Native invertebrates include ‘ōpae kala‘ole and ‘ōpae ‘oeha‘a, the native shrimp (*Atyoida bisculata* and *Marcrobrachium grandimanus*) (U.S. Army COE, December 2008).

Potential Project Impact

Clearing of invasive vegetation and the floating peat mat would create more open water areas, allowing existing streams to flow and meander through the area. This would facilitate the migration of native aquatic fauna and have a long-term positive impact on the sustainment of these species. The positive impacts to aquatic biota would be addressed further in the Draft EIS.

3.5 AIR QUALITY

Existing Conditions

Federal ambient air quality standards (AAQS) have been established by the U.S. Environmental Protection Agency (EPA) for six criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead (Pb), ozone (O₃), and concentrations of particulate matter less than 10 microns (PM₁₀) and 2.5 microns (PM_{2.5}). The State of Hawai‘i has established ambient air quality standards for these pollutants that are somewhat more stringent than Federal standards under Title 11, Chapter 59, HAR. Table 3.1 compares State and Federal Ambient Air Quality Standards.

Table 3.1 State and Federal Ambient Air Quality Standards				
Air Pollutant	Averaging Time	Hawai'i AAQS	Federal (NAAQS)	
			Primary	Secondary
Carbon Monoxide (CO)	1-hour	9 ppm	35 ppm	--
	8-hour	4.4 ppm	9 ppm	--
Lead (Pb)	Rolling 3-month	1.5 µg/m ³	.15 µg/m ³	.15 µg/m ³
Nitrogen Dioxide (NO ₂)	1-hour	--	100 ppb	--
	Annual	0.04 ppm	53 ppb	0.053 ppm
Ozone (O ₃)	8-hour	0.08 ppm	0.070 ppm	0.070 ppm
Particulate Matter ≤10 micrometers in diameter (PM ₁₀)	Annual	50 µg/m ³	--	--
	24-hour	150 µg/m ³	150 µg/m ³	--
Particulate Matter ≤2.5 micrometers in diameter (PM _{2.5})	Annual	--	12 µg/m ³	15 µg/m ³
	24-hour	--	35 µg/m ³	150 µg/m ³
Hydrogen Sulfide (H ₂ S)	1-hour	0.025 ppm	None	None
Sulfur Dioxide (SO ₂)	Annual	0.03 ppm	--	--
	24-hour	0.14 ppm	--	--
	3-hour	0.50 ppm	--	0.50 ppm
	1-Hour	--	.075 ppm	--

Source: State Department of Health, 2001 and US Environmental Protection Agency 2015

Air quality in the project area is primarily affected by vehicular carbon monoxide (CO) emissions, and to a lesser extent by nearby residential, commercial, and industrial uses. Carbon monoxide (CO) emissions are generated by traffic on the roads surrounding the project area and vehicles traveling into the project site. These factors decrease the likelihood that project area air quality would be impacted by vehicle emissions. Dominant northeasterly tradewinds may push onsite vehicular emissions along with emissions from nearby industrial and commercial uses downwind, away from the project area.

Potential Project Impacts

Short and long-term impacts to air quality in the project area could result from the temporary operation of machinery associated with vegetation clearing, vegetation processing and disposal, site grading and construction activities. Long-term impacts may be associated with vehicle emissions. These potential impacts would be assessed in the Draft EIS.

3.6 NOISE

Existing Conditions

A variety of activities and land uses surrounding the project area are currently sources of ambient noise. Vehicular traffic along Kapa‘a Quarry Road and Kalaniana‘ole Highway is currently the primary generator of noise. Traffic noise levels north of the project area at the intersection of Kapa‘a Quarry Road with Kapa‘a Quarry Access Road (leading into the industrial area) were 60 decibels (dB) L_{dn} (SD&C January 2011).

Institutional uses near the project area include Le Jardin Academy, a K-12 independent school, and Castle Medical Center. Noise generated from educational activities at the school has minimal impact on the project area due to its distance from the project area (about 750 feet). Noise impacts from industrial uses are and currently marginal, as industrial uses near Kawainui Marsh are just over 2,500 feet from the western end of the marsh. Moreover, these land uses are active only during business hours do not cause significant noise impacts to the project area.

Potential Project Impacts

Proposed restoration activities would generate some noise primarily from mechanical equipment used for vegetation clearing and construction activities. The noise may be audible at the property line. Other project-related noise may be due to an increase in people and vehicles within the project area. The impact of project-generated noise, as well as the impact of external noise on the project area would be discussed further in the Draft EIS.

3.7 VISUAL RESOURCES

Existing Conditions

Visual resources within and around the project area have been addressed in two City and County of Honolulu planning documents, the Ko‘olau Poko Sustainable Communities Plan (DPP August 2000) and Coastal View Study (Chu and Jones 1987). These planning documents identify visual resources associated with the project area. The Ko‘olau Poko Sustainable Communities Plan identifies the orientation and vantage points of major panoramic views within the Ko‘olaupoko ahupua‘a, which includes the project area. Kawainui was identified as an important wetland and wildlife habitat resource under this plan, and the plan identified the following scenic views from major roadways:

1. Continuous northbound view of marsh from Kalaniana‘ole Highway between Kapa‘a Quarry Road and Castle Medical Center.
2. Continuous northwest view of marsh from Kailua Road between Hāmākua Drive and Hanale Place.

Potential Project Impact

Project improvements are intended to be designed in alignment with the natural character of the project area. This would allow improvements to blend in with the natural environment and should have a minimal impact on area visual resources. There would be no adverse impact to the scenic views noted above.

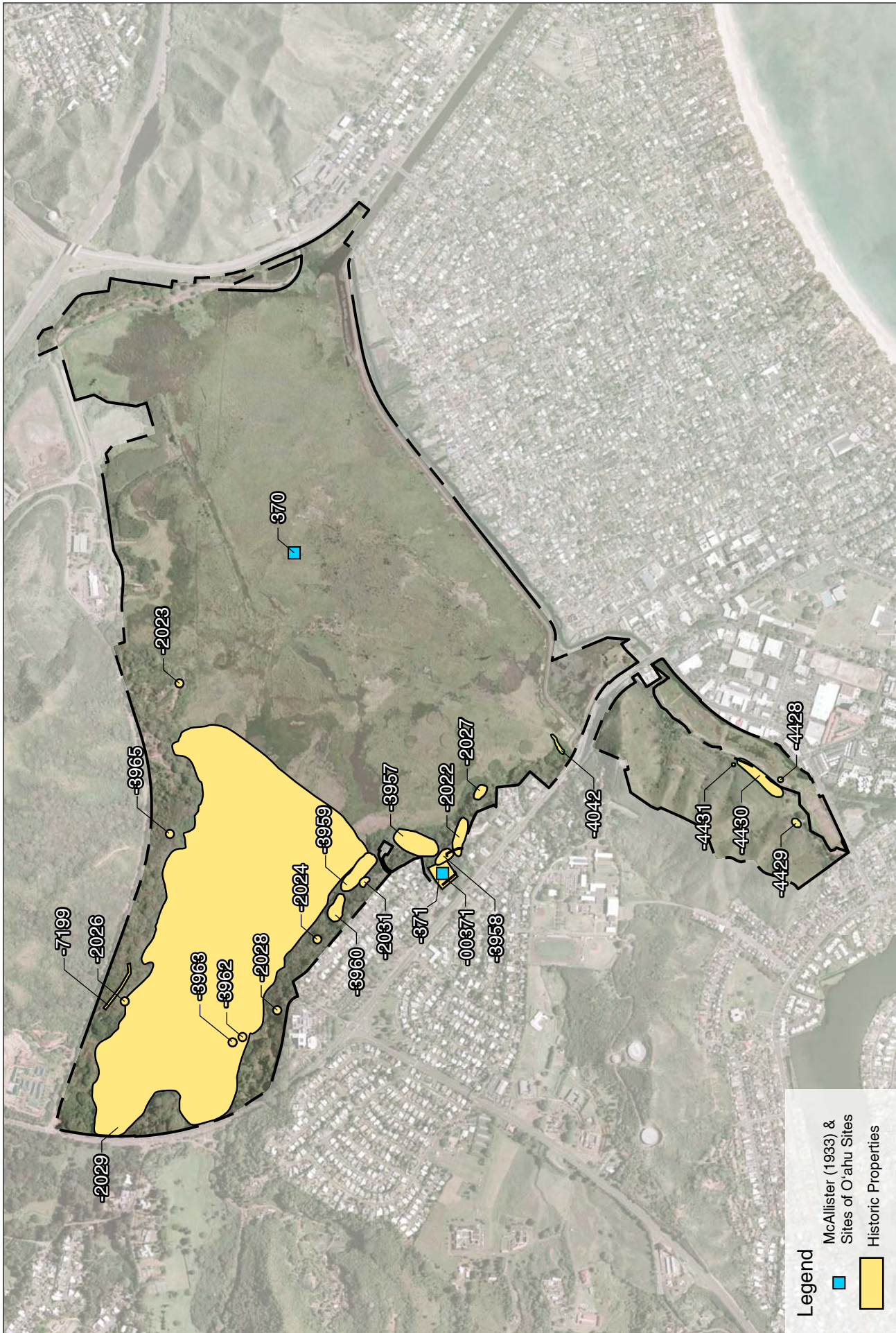
3.8 HISTORIC, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Existing Conditions

Kawainui is part of the Kailua ahupua‘a and the focus of many Hawaiian chants (mele) that speak of Kawainui as a place of abundance in pre-contact times. Kailua was a residence for O‘ahu ali‘i which accounts for eight (8) heiau within the ahupua‘a, of which three (3) large, significant heiau were located around Kawainui. Ulupō Heiau (Site #371) is located within the project area while Pahukini Heiau (Site #359) and Holomakani Heiau (Site #360) are located upslope of Kapa‘a Quarry Road and outside the project area.

The abundance of resources of the Kailua ahupua‘a, including the 450-acre fishpond of Kawainui and the surrounding lo‘i kalo, supported a large population of both ali‘i and maka‘āinana. Archaeological research has identified the remains of agricultural terraces on the slopes around Kawainui and into Maunawili Valley, indicating that taro was grown extensively and intensively in Kailua from around the 14th century. Irrigated kalo and dryland crops were cultivated during the pre and early post contact period.

The Kawainui Marsh Archaeological-Cultural-Historical Complex (SIHP Site #50-80-11-2029) encompasses much of the project area and was deemed eligible for listing on the National Register of Historic Places in 1979. This complex is not listed on either the State or National registers. Although there have not been previous archeological studies within Hāmākua’s wetland areas, there have been a number conducted in the vicinity, and pre and post-contact historic sites have been identified on the adjacent Pu‘uoehu hillside. These sites include two habitation platforms, two enclosures of unknown function, and areas of lithic scatter (a distribution of cultural items consisting primarily of lithic or stone material). Figure 3.3 highlights the location of these historic properties.



Source: State of Hawai'i GIS Data & Cultural Surveys Hawai'i, Inc.

Kawainui - Hāmākua Master Plan
Figure 3.3 - Historic Properties

Kailua, O'ahu



HHF PLANNERS
places for people

Within the project area, there are ongoing efforts by native Hawaiian organizations to protect the cultural and historic resources and restore the cultural landscape of Kawainui. For example, in 2011 the *Draft Ulupō Heiau Cultural Resources Management and Landscape Plan* was prepared by ‘Ahahui Malama I Ka Lokahi (AML) and the Kailua Hawaiian Civic Club as a guide to restore approximately seven acres around Ulupō Heiau. Since 2003, these co-curators have removed invasive species, and planted native and Polynesian-introduced canoe plants. The intent is to develop the area as a “living classroom” for cultural education programs, place-based learning, and the perpetuation of cultural practices. These co-curators are currently providing these educational opportunities for schools and private tour groups.

At Nā Pōhaku o Hauwahine and the adjacent site of Pōhākea, Hawaiian organizations are developing educational and cultural programs that incorporate the traditional mo‘olelo and history of Kawainui with preservation of the archaeological and cultural sites in the Nā Pōhaku area. Removal of invasive plants and restoring the native lowland forest are an integral part of this effort by AML at Nā Pōhaku while Ke Kahua o Kualī‘i is focused on Hawaiian settlement and Polynesian-introduced plants at Pōhākea.

Table 3.2
Kawainui and Hāmākua Archaeological Sites

SIHP # 50-80- 11-	Site Name	TMK	Site Description
370	Kawainui Marsh	[1] 4-2-016:015	McAllister (1933:186) designated “Kawainui pond” as site 370; it was “once a large inland fishpond.”
371	Ulupō Heiau	[1] 4-2-103:018	Heiau documented by McAllister as Site 371. Its large high terrace dominates Kawainui Marsh. Ulupō means “night inspiration.” It is said to have been built in a night by the Menehune.
2022	Kawainui Terraces	[1] 4-2-013:038	Series of terraces from marsh edge upslope, a long retaining wall upslope, ruins of a historic house, a spring, excavation yielded charcoal dates in range of AD 353-655 and AD 529-965. Artifact found on surface.
2023	Kawainui Cluster	[1] 4-2-013:010	Cluster 10: 12 features including retaining walls, L-shaped alignments of rocks, terraces, roadbed, level terrace or platform, surface scatter. Cluster 11: two retaining walls. This site includes Nā Pōhaku o Hauwahine.
2024	Makalii Slope	[1] 4-2-013:010	Mounds, wall remnants, a terrace
2026	Kapaloa agricultural terrace	[1] 4-2-013: 010	Agricultural terrace that extends along marsh edge; single-course high walls; rusting crane
2027	Kukanono habitation site	[1] 4-2-013:038	Stone wall rectangular enclosure, linear pile of rocks, terrace, surface artifacts
2028	Ulukahiki Walls	[1] 4-2-006:004 or 007	Two walls that meet at a right angle

Table 3.2 (continued) Kawainui and Hāmākua Archaeological Sites			
SIHP # 50-80- 11-	Site Name	TMK	Site Description
2029	Kawainui Marsh Archaeological-Cultural-Historical Complex	[1] 4-2-013:005, 022 [1] 4-2-016:015	Complex of agricultural fields consisting of basalt-boulder alignments was documented. Additional subsurface testing identified lithic debitage, volcanic glass flakes and basalt adze. Mound of river cobbles may represent a local adaption to water control. Grinding stone and habitation remains.
2031	Kawainui Slope site	[1] 4-3-013:038	Archaeological excavation on Pohakupu/Kukanono slope prior to residential development found no pre-contact agricultural features. Features dated to post 1900s or post-1950s. However, traditional Hawaiian occupation and tool manufacturing were evident from basalt flakes and very large grinding stone.
3957	Kawainui Agricultural Complex	[1] 4-2-013:038	Nine dryland agricultural terraces, 20 mounds, small C-shaped structure, walls, walled depression, remains of a historic structure; surface artifact recovered. Also referred to as the "Konohiki Site."
3958	Kukanono Terrace and Habitation Complex	[1] 4-2-013:031 or 038	Terrace, wall along marsh extending inland
3959	Miomio Agricultural and Habitation Complex	[1] 4-2-013:038	Twenty-six mounds, 19 dryland agricultural terraces, linear walls, historic house foundation, prehistoric basalt mirror found on surface and other pre-contact basalt artifacts, large boulder grindstone; historic artifacts, dating from AD 529-965 and AD 353-655
3960	Pohakupu Agricultural Cluster	[1] 4-2-013:038	Large lo'i, approx. 40x30m; stone and earthen platform, stone-lined channel, stone mounds
3962	Makalii Historic Site	[1] 4-2-013:010	Three historic buildings
3963	Makalii Mounds	[1] 4-2-013:010	Earthen mound
3965	Pohakea Terrace	[1] 4-2-013:010	Low stone terrace perpendicular to a second stone wall
4428	--	[1] 4-2-003:030	Two habitation platforms
4429	--	[1] 4-2-003:017	Lithic scatter
4430	--	[1] 4-2-003:017	Lithic scatter
4431	--	[1] 4-2-003:017	Two enclosures-unknown function
4042	Waimanalo Irrigation System	[1] 4-2-013	1923 pump house foundation and associated canal that extends into Kawainui Marsh. Nominated to National Register.
7199	Road remnant	[1] 4-2-013:005	Historic (prior to 1928) unpaved section of roadway that extends roughly parallel to the western edge of Kawainui Marsh.

Potential Project Impact

A major component of the plan is to support and expand the ongoing cultural activities and educational programs at Ulupō Heiau and Nā Pōhaku o Hauwahine. Other locations around Kawainui have been proposed for cultural programs, but not all locations are as directly associated with cultural and historic sites. The archaeological, historic and cultural impact of the project would be discussed in the Draft EIS.

CHAPTER 4: SOCIAL AND ECONOMIC CHARACTERISTICS



4.1 INTRODUCTION

Information from the 2010 U.S. Census was examined to understand the social characteristics of the project area. Employment and income data were compiled from the American Community Survey 2010 data because economic information was not discussed in the 2010 Census.

The Kawainui portion of Kawainui-Hāmākua is located within census tract 9810 where there is no census data available. Kawainui is not located within place level geographies as defined by the 2010 census. The Hāmākua portion of the project area is located in the Kailua Census Designated Place (CDP). The Kailua CDP is located immediately east of Kawainui and represents the demographic characteristics of the Kailua neighborhood for the purposes of this environmental analysis. This census designated place is a diverse, urbanized community whose population totals 38,635 persons. The Kailua CDP would serve as a proxy for demographic characteristics of the project area due to the absence of demographic information for the area. This is a logical relationship to establish because the Kailua CDP contains households and individuals living in close proximity to the project area that would most likely be affected by project related impacts. Honolulu County serves as a baseline of comparison for project area demographic characteristics.

The project would not add additional housing units and is intended to enhance the existing character of Kawainui. Therefore, the project is not anticipated to result in wider social, economic, or characteristic changes to the surrounding area. While impacts are anticipated to be minimal, potential adverse impacts to these characteristics would be addressed in the Draft EIS.

4.2 POPULATION AND HOUSING

Existing Conditions

Demographic characteristics of the Kailua CDP compared to the City and County of Honolulu as a whole are shown in Table 4.1. Census data indicates that the Kailua CDP population of 38,635 persons comprises a little over 4 percent of Honolulu's population. The median age of individuals living in the Kailua CDP is 42.8 years which is comparatively higher than Honolulu's median age of 37.8 years. This pattern is also reflected in the slightly higher percentage of persons 65 years and older living in Kailua.

Kailua's population had a comparatively higher percentage of Whites (more than double) and lower percentage of Asians (less than half) compared to the County as a whole. Kailua has a lower percentage of Native Hawaiian or other Pacific Islander residents, but a higher percentage of individuals with ancestry from two or more races.

The Kailua CDP contains about 4 percent (13,650 housing units) of the total number of housing units in Honolulu. The Kailua CDP has a higher percentage of families relative to Honolulu, but a similar average household size of 2.98 persons per unit. Kailua has a slightly higher percentage of households with individuals 65 years and over at 34.5 percent compared to 31.2 in Honolulu.

Table 4.1 Summary of U.S. Census Demographic Data (Census 2010 and ACS 2010)				
Description of Demographic Data	Kailua CDP		Honolulu County	
	Number	Percent	Number	Percent
POPULATION (Census 2010)	38,635		953,207	
Median age	42.8 years		37.8 years	
RACE (Census 2010)				
White	17,015	44.0	198,732	20.8
Black or African American	224	0.6	19,256	2.0
American Indian and Alaska Native	91	0.2	2,438	0.3
Asian	7,827	20.3	418,410	43.9
Native Hawaiian or Other Pacific Islander	2,581	6.7	90,878	9.5
Some other race	364	0.9	10,457	1.1
Two or more races	10,533	27.3	213,036	22.3
HOUSEHOLDS				
Average household size	2.98		2.95	
Average family size	3.31		3.48	
	persons		persons	
	persons		persons	
INCOME (ACS 2010)				
Median household income	\$91,082		\$70,093	

Source: U.S. Census Bureau, Census 2010 and American Community Survey 2010

Potential Project Impact

The project should not have a significant impact on population, demographic, or economic characteristics. The Draft EIS will address likely effects in greater detail.

4.3 EMPLOYMENT AND HOUSEHOLD INCOME

Existing Conditions

The 2010 American Community Survey, indicates that Kailua has a higher percentage of employed individuals than Honolulu and a notably lower percentage of households earning less than \$10,000 annually. Individuals earning between \$10,000 and \$49,999 in the Kailua CDP were comparatively lower than other individuals in the same earnings bracket in Honolulu (20.1 percent compared to 29.4 percent). A greater proportion of earners in the Kailua CDP earned greater than \$50,000 compared to Honolulu. Additionally, the median household income of Kailua residents was comparatively higher at \$91,082 compared to just \$70,093 for the County.

Kailua residents are diverse by annual earnings but possess a comparatively higher median household income than Honolulu based upon the 2010 American Community Survey data.

Potential Project Impact

The project will generate some short-term construction related jobs, and possibly a few full-time jobs as part of DOFAW and DSP management of Kawainui-Hāmākua. Some full-time jobs may also be created as part of non-profit organization activities occurring with the cultural centers or educational programs. However, these changes should not have a significant impact on employment or household income. The Draft EIS will address likely effects in greater detail.

4.4 CHARACTER OF THE COMMUNITY

Existing Conditions

Kailua can be characterized, as a large, established residential community comprised primarily of single-family homes. Multi-family residential developments are concentrated near Kailua Town and are interspersed throughout the area. Kailua has an active, cohesive community whose residents are civically engaged. Kailua residents participate in various community-oriented activities, gatherings, and events. The community has an annual “I Love Kailua” town party and fundraiser that promotes local arts, foods, and entertainment. There is also a 4th of July parade and fireworks show that has been an established event since 1948.

Kailua Town is the neighborhood’s business and commercial center, with the most intensive commercial activity within walking distance of the Kailua Road and Oneawa Street intersection. Streets with major commercial and retail establishments include Kailua Road, Hāmākua Drive, Oneawa Street, and Hahani Street. Other commercial areas are found in the communities of Enchanted Lake and Aikahi Park.

Various community events are conducted at Kawainui, such as the Ramsar World Wetlands Day. Regular volunteer workdays occur at DOFAW's wetland ponds, Ulupō Heiau, Nā Pōhaku o Hauwahine, and Pōhākea. Other volunteer activities involve trash collection in the upland area of the marsh, removal of invasive marsh vegetation, and removal of graffiti on the levee.

Kawainui is an undeveloped, natural area with no residential, commercial, or industrial uses within the boundaries of the wetland. However, there are industrial uses and two institutional uses in the area around Kawainui. Further south of Kawainui Marsh are the residential communities of Maunawili and Kūkanono. Although Hāmākua Marsh is located within Kailua Town, the character and uses within this portion of the project area differ greatly from Kailua Town.

Potential Project Impact

The project focuses on restoration initiatives that should enhance the character of the project area. These initiatives might positively impact the character of Kailua as a whole by improving conditions of one of the most valuable natural resources located in the community. Other improvements proposed, such as cultural centers and pedestrian paths, should not have a significant impact on the character of Kailua, however, the Draft EIS will evaluate potential changes and address this in greater detail. Input from some Kailua community members expressed concern with project improvements attracting more visitors to Kailua.

CHAPTER 5: INFRASTRUCTURE AND PUBLIC FACILITIES



5.1 WATER FACILITIES

Existing Conditions

The City Board of Water Supply (BWS) provides potable water service on O‘ahu. The Windward O‘ahu region is serviced by several water systems, one of which is the Maunawili water system that services the project area. The system provides potable water service to residences in the Maunawili community, and extends to Olomana and northward towards Kawainui Marsh. There is municipal water service and infrastructure surrounding the entire project area due to the variety of uses located nearby. Existing municipal water infrastructure relevant to proposed project area improvements include a 36 inch water line along Kapa‘a Quarry Road, a waterline on Kalaniana‘ole Highway, a 24-inch waterline on Kailua Road, and a waterline running near the Hāmākua Wetlands. An existing City waterline paralleling Ulukahiki Street provides potable water service to the DOFAW baseyard located in the Kahanaiki subarea. The DOFAW baseyard is the only source of existing potable water demand in the project area.

Potential Project Impact

Several facilities identified in the master plan such as a proposed education center at Nā Pōhaku, comfort stations, and offices would require water and sewer service. The Draft EIS would address the estimated demand and impact on existing water facilities.

5.2 WASTEWATER FACILITIES

Existing Conditions

The City Department of Environmental Services (DES) provides municipal wastewater collection and treatment in the Kailua district via a system of wastewater pump stations and sewer lines. Wastewater from these areas is processed at the Kailua Regional Wastewater Treatment Plant (RWTP) located along Kāne‘ohe Bay Drive in the ‘Aikahi Park community. This RWTP is capable of processing up to 28 million gallons of wastewater per day (mgd). Existing project area facilities do not utilize City wastewater infrastructure. The DOFAW baseyard and the City Model Airplane Park are the only existing wastewater generators in the project area. Both uses are serviced by septic tank and leach field systems.

Potential Project Impact

As noted above, proposed project improvement such as the education center, comfort stations and office space would generate wastewater demand. It is likely that wastewater service would be provided by septic tank and leach field similar to the DOFAW baseyard and Model Airplane Park.

The project area is situated makai of the State Department of Health underground injection control (UIC) line. The UIC line establishes a boundary between exempted aquifers and underground sources of drinking water. Aquifer areas makai of the UIC line are not considered drinking water sources, allowing a wider variety of injection wells. The project area is also situated makai of the City BWS's No Pass Zone. The No Pass Zone was established to protect water resources by regulating areas where waste facilities could be located. Waste facilities include sanitary landfills and sewage disposal systems. Less stringent requirements are imposed on project area wastewater systems since the project is located in the makai portion of the No Pass Zone.

5.3 DRAINAGE FACILITIES

Existing Conditions

Existing drainage culverts are located within the State Department of Transportation right-of way on Kapa'a Quarry Road. Stormwater enters the project area through these drainage culverts and stormwater is discharged into Kahanaiki and Maunawili streams. Drainage culverts also exist on Kapa'a Quarry Road which channel upland runoff into the project area. These drainage culverts are generally filled with sediment and in poor condition or complete disrepair. As a result, discharge from these culverts contributes to erosion of upland areas and the sedimentation of Kawainui. Drainage culverts along Hāmākua Drive and Kailua Road discharge into Kawainui Stream. The stream overflows into Hāmākua during times of heavy rain. Culverts are well maintained and do not cause additional erosion.

Potential Project Impact

The project calls for improvements to the existing project area drainage facilities. Proposed improvements include providing grouted riprap protection downhill from the culvert and replacing existing junction boxes with new drop manhole structures. The actual drainage improvements used would be determined by DOFAW at the time of project implementation.

These improvements are expected to have a positive impact on drainage facilities and reduce erosion and non-point source pollution. The impact of these improvements on the project area ecosystem would be discussed in detail in the Draft EIS.

5.4 SOLID WASTE FACILITIES

Existing Conditions

The project area is located within the City's Ko'olaupoko collection district. The district includes waste generators along the entire windward coastline from Waimānalo to Kahuku. The City Department of Environmental Services, Refuse Division provides municipal solid waste curbside collection for all single-family residences and a limited number of multi-family properties, non-residential customers, and City agencies on O'ahu. Bulky items are collected on a monthly basis and either recycled or delivered to the Waimānalo Gulch Landfill. Residential or commercial waste is presently not generated within the project area.

Potential Project Impact

The majority of the facilities proposed in the master plan are interpretive shelters or paths that would not be permanently occupied. The proposed educational center, offices and comfort stations would be at various locations within the project area, and are not anticipated to result in a significant increase in waste generation. These impacts would be discussed in the Draft EIS.

5.5 GREEN WASTE DISPOSAL

Existing Conditions

Any green waste generated from DOFAW maintenance activities in the project area is left on the project site to decompose or taken to an approved green waste facility. An existing vegetation processing site of over 20 acres is located on Kapa'a Quarry Road, adjacent to the City's Model Airplane Park. This processing site can be utilized for green waste disposal, as it was established by the City in 1992 for that purpose. Processed vegetation would then be transported to the appropriate City refuse disposal site.

Potential Project Impact

The project proposes improvements to the existing green waste processing site in the northwest corner of the project area. Green waste would be composted onsite, reducing the cost of transportation and ensuring project restoration activities would not result in undue strain on existing municipal green waste processing capacity. The project would provide needed improvements to existing green waste disposal capability and accommodate future project maintenance activities. The project should not have a significant impact on City green waste processing facilities.

5.6 TRANSPORTATION FACILITIES

Existing Conditions

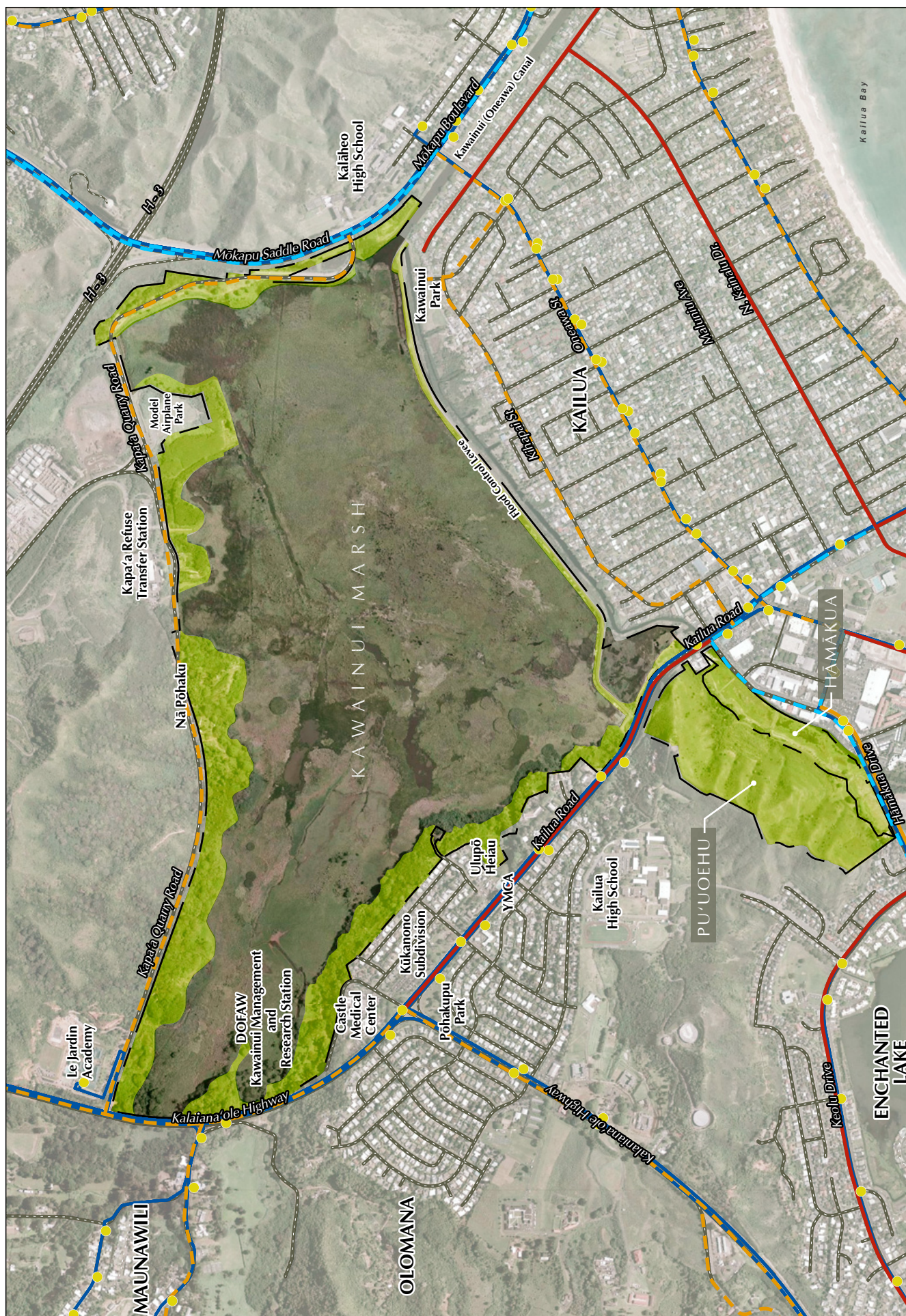
Figure 5.1 shows major transportation routes and facilities in the project vicinity. Vehicular and pedestrian access is provided to the project area via four major roads bounding the project area. These roads include Kapa‘a Quarry Road, Kalaniana‘ole Highway (State Highway 61), Kailua Road, and Hāmākua Drive.

Kapa‘a Quarry Road is a privately owned road along the northern and western sides of the project area. The road provides a connection between Kalaniana‘ole Highway to the south and Mōkapu Boulevard to the north of Kawainui. Kapa‘a Quarry Road forms a signalized T-intersection with Kalaniana‘ole Highway at the southwest corner of Kawainui. At this intersection, motorists and pedestrians can turn east to travel onto Kailua Road to get to Kailua Town or turn west onto Kalaniana‘ole Highway to travel to Honolulu and Kāne‘ohe.

Kailua Road follows the southern side of the project area and is the main access route into Kailua Town. Hāmākua Drive provides restricted vehicular access to the Hāmākua portion of the project area. Local roads that provide access to the project area include Manu O‘o Road in the Kūkanono neighborhood that provides access to the Ulupō Heiau State Historical Park. Ulukahiki Street provides access to the existing DOFAW baseyard that is located within the project area behind Castle Medical Center.

Public bus service is provided by O‘ahu Transit Services, which operates the system under a public-private partnership with the City and County of Honolulu Department of Transportation Services. Several major bus routes run past the project area along Kalaniana‘ole Highway and Kailua Road, connecting Kailua to downtown Honolulu and the Ala Moana Shopping Center. Bus service is also provided connecting to neighboring windward communities of Kāne‘ohe and Waimānalo.

There is an existing bike lane along both sides of Kailua Road. Figure 5.1 shows the location of future bicycle improvements, according to the City’s 2012 O‘ahu Bike Plan. Kalaniana‘ole Highway, Kapa‘a Quarry Road, and Mōkapu Boulevard are shown as future bike routes. The levee, although not a designated bike path, is currently used for walking, jogging and recreational bicycling.



Kawainui - Hāmākua Master Plan

Figure 5.1 - Major Roadways and Transportation Routes

Kailua, O'ahu

A vertical scale bar labeled "FEET" with markings at 0, 800, and 1,600.



IHF PLANNERS
places for people

- Legend**
- Bus Stop
 - Bus Routes
 - Roadways
 - Existing Bike Lane
 - Existing Bike Route
 - Proposed Bike Lane
 - Proposed Bike Route

Potential Project Impact

The project proposes an increase in wetland restoration activities which would involve the transport of personnel, equipment, and supplies, including large trucks into the area. These may have minor impacts to local roadway traffic. Project drainage improvements along Kapa‘a Quarry Road and the construction of paths and structures would have similar impacts. Over the long term, more people would come to Kawainui to participate in educational and cultural activities. Participants in school-based programs are likely to arrive by bus. Other visitors may drive, walk or ride bicycles. The creation of a continuous walking path around the marsh perimeter is likely to increase the number of recreational walkers, joggers and bicyclists in the project area.

The short and long-term impact of the master plan proposals on roads and other transportation facilities would be discussed in the Draft EIS. A traffic impact assessment report (TIAR) would be prepared and discuss the impact on vehicular traffic. Roadways to be assessed in the TIAR are yet to be determined.

5.7 ELECTRICAL AND COMMUNICATION FACILITIES

Existing Conditions

Electrical service is provided to sites surrounding the project area by Hawaiian Electric Company (HECO). Electrical distribution lines are brought in via overhead sub-transmission lines located on utility poles along Kapa‘a Quarry Road and Kalaniana‘ole Highway.

The only existing facility requiring electrical and communication services within the project area is the DOFAW baseyard. These services are provided to the baseyard and urbanized uses in the surrounding area by Verizon Hawai‘i and Oceanic Time Warner Cable, respectively. These services are transmitted via overhead lines situated on electrical sub-transmission poles routed along roadways in the project area.

Potential Project Impact

Proposed facilities requiring electrical and communication service include the expanded maintenance facilities at the DOFAW baseyard, the education center, the cultural and environmental centers, the office in the marsh processing area, and various comfort stations throughout the area. The impact of this demand on project area electrical and communication facilities would be addressed in the Draft EIS.

5.8 RECREATIONAL FACILITIES

Existing Conditions

Several City-owned and operated recreational facilities are located in the Kailua district. Relevant information on these facilities is provided below

- *Kawainui Model Airplane Park.* This municipal park is roughly five acres and is located along Kapa‘a Quarry Road. The park is used by enthusiasts to fly radio controlled model aircrafts.
- *Maunawili Valley Neighborhood Park.* This municipal park is located in the Maunawili residential community. The park has children’s play equipment, two tennis courts, and an open grassed area.
- *Maunawili Neighborhood Park.* This municipal park is located in the Olomana residential community. The park has two basketball courts, a volleyball court, a restroom facility, an open grassed area, and children’s play equipment.
- *Pohakupu Mini Park.* This municipal park is about 3.5 acres and located at the intersection of Kalaniana‘ole Highway and Kailua Road. This park has a large water fountain, benches, an open lawn, and children’s play equipment.
- *Kawainui Neighborhood Park.* This municipal park is about 4.8 acres and is located at the end of Kaha Street and adjacent to the levee. The park has a large grassed area for soccer and other activities.

A site within the project area is currently being used as a canoe and kayak launching area into Kawainui Canal. Although not originally intended as a recreational amenity, the levee is a popular walking, jogging and biking path used by the community.

Potential Project Impact

The project does not propose residential development or an increase in the resident population of the area which could have an impact on the public park facilities listed above. The project does not propose any active recreation fields or activities. However, the proposal for a canoe launch area and parking lot on the Kawainui Canal across Kalāheo High School would support ongoing school and canoe club activities. The provision of walking paths and trails along the perimeter of Kawainui provides an opportunity for passive outdoor recreation, allowing more people to experience the natural and cultural beauty of this public resource.

5.9 MEDICAL FACILITIES

Existing Conditions

Castle Medical Center is the primary medical facility serving Windward O‘ahu. The medical center is located on the southwestern corner of the project area at the intersection of Kalaniana‘ole Highway and Kailua Road. The facility is a full-service medical center offering a wide range of inpatient, outpatient, and home-based services. The medical center is a 160-bed facility with more than 1,000 employees, and is staffed by 248 physicians.

Potential Project Impact

The project improvements would have minimal effect on the Castle Medical Center operations since it would not increase the number of long-term residents near the project area who may require medical treatment from the hospital.

5.10 EDUCATIONAL FACILITIES

Existing Conditions

The project area is within the State Department of Education (DOE) Kailua-Kalāheo Complex Area. The complex area is further subdivided into the Kailua and Kalāheo sub complexes that are associated with specific public educational institutions. Kalāheo High School, Kailua High School, and Maunawili Elementary School are the closest public schools to the project area. Kalāheo High School is located 366 feet away from the northernmost corner of the project area. Maunawili Elementary School is just over 2,000 feet from the southern corner of the project area. Le Jardin Academy is a private school located 200 feet upslope from Kapa‘a Quarry Road.

Potential Project Impact

The project improvements would not increase school enrollment or directly impact public or private educational facilities in the surrounding area. The project would have a positive educational impact, as the proposed educational and interpretive facilities would provide an opportunity for more school children to participate in hands-on learning about Kawainui.

5.11 POLICE AND FIRE PROTECTION

Existing Conditions

The Honolulu Police Department provides protective services to the Kailua district through their District 4 operations bureau. The district encompasses the entire Windward O‘ahu region from Makapu‘u to Kahuku. The main station is located in Kāne‘ohe, with the Kailua substation located along Kuulei Road. The Honolulu Fire Department (HFD) has three fire stations located in the Kailua area. The fire station located closest to the project area is on Kalaniana‘ole Highway next to Maunawili Elementary School. A second station is located in Kailua town along Kuulei Road. A third fire station is located in the ‘Aikahi community.

Potential Project Impact

The project improvements would increase public access to Kawainui-Hāmākua, which would in turn require greater security and monitoring of the area. DLNR is responsible for overall security and management of the project area after project implementation. However, the HFD would be responsible for providing fire protection and the HPD would be responsible for police protection within the project area. Fire access would need to be provided.

During the master plan phase, concerns were raised by some individuals in the community that increased public access at Kawainui could result in an escalation in littering, loitering, trespassing on private property, and property crime. Others have raised concerns that greater public access could increase the number of homeless individuals in the area. Homelessness is a serious social and economic problem that has increased dramatically in recent years, but that exists independent of the project. However, these concerns, as they relate to public safety would be discussed in the Draft EIS.

CHAPTER 6: CONFORMANCE WITH LAND USE PLANS & POLICIES



The Draft EIS would include a chapter discussing the conformance of the project to existing federal, State and City plans, policies, and regulations. These plans, policies and regulations are summarized briefly below.

6.1 FEDERAL

6.1.1 Land and Water Conservation Fund (LWCF) Program

As discussed previously in Section 1.4.3, lands within the project area were acquired by the State of Hawai‘i using funds from the federal Land and Water Conservation Fund (LWCF) Program. Section 6(f) of the LWCF program requires that these lands be used and maintained for the purpose of public outdoor recreation in perpetuity. The project’s conformance with these requirements would be discussed in the Draft EIS.

6.1.2 U.S. Fish and Wildlife Service Recovery Land Acquisition (RLA) Program

A grant from the U.S Fish and Wildlife Service Recovery Land Acquisition (RLA) program was used by the State to acquire the Pu‘uoeahu Hillside property. The RLA program is intended to assist in the recovery of threatened and endangered species through the acquisition of habitat from sellers. Habitat acquisition affords threatened and endangered species long-term protection, which is an essential part of a comprehensive recovery effort. Properties purchased with RLA funds must be managed for purposes stated for its acquisition. The project’s consistency with the requirements of the RLA grant program would be discussed in the Draft EIS.

6.1.3 Section 404, Clean Water Act (CWA)

The construction of stream crossings and/or boardwalk through wetland areas may require a Department of the Army (DA) permit from the U.S. Army Corps of Engineers (USACE), in accordance with Section 404 of the Clean Water Act (CWA). Section 404 defines requirements for discharges of dredged or fill materials in waters of the United States and sets limits on such discharges. Potential permit requires would be discussed further in the Draft EIS.

6.1.4 Section 402, CWA National Pollutant Discharge Elimination System (NPDES)

Discharges of point sources of pollutants into surface waters of the U.S. are regulated under the NPDES program, pursuant to CWA, Section 402. The State Department of Health (DOH) administers the NPDES program under Hawai'i Administrative Rules (HAR) 11-55. Potential construction activities, in particular discharges for storm water associated with construction activity would require a Best Management Practices plan and approval from the DOH.

6.1.5 National Historic Preservation Act (NHPA), Section 106 Consultation

The National Historic Preservation Act (NHPA) was enacted to provide for the protection and use of historic properties for the benefit of the public. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties. The project does not involve use of federal lands or funds. However, a DA permit from the USACE may be required for proposed pedestrian path stream crossings and/or boardwalks in wetland areas. As such, the USACE, as a federal agency, must consider the effect of authorizing these specific improvements in accordance with Section 106. The State DLNR, State Historic Preservation Division (SHPD) oversees this historic preservation compliance process.

6.1.6 Endangered Species Act, Section 7 Consultation

The Endangered Species Act of 1973 (ESA) was enacted to protect endangered species and also the ecosystems upon which they depend. Section 7 of the ESA requires all federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) if they are proposing an action that may affect listed species or their designated habitat. *Action* is defined broadly to include funding, permitting and other regulatory actions, such as the issuance of a DA permit from the USACE.

The process begins with informal consultation with the USFWS. If the determination is made that the proposed action is not likely to affect any listed species in the project area, and the USFWS concurs, the informal consultation is complete. If the agency's action may adversely affect a listed species, a biological assessment is prepared to assist in further determination. Depending on the findings, formal Section 7 consultation may be required.

6.1.7 Coastal Zone Management Act

The national Coastal Zone Management Act (CZMA), Section 307, requires federal agency activities affecting any coastal use or resource to be undertaken in a manner consistent to the maximum extent practicable with the state's CZM program. The CZMA federal consistency provision also requires that federal actions (e.g., issuance of a DA permit) be reviewed by the state's CZM program to ensure consistency with state policies.

6.2 STATE OF HAWAI'I

6.2.1 State Land Use Districts

Pursuant to Title 13, Chapter 205 (Land Use Commission), HRS, all lands in the State of Hawai'i are classified by the State Land Use Commission (LUC) into four major districts. These four land use districts are Urban, Rural, Agricultural, and Conservation. Permitted uses within the State Land Use Districts are prescribed under Title 13, Chapter 205, HRS, and the State LUC's Administrative Rules prescribed under Title 15, Subtitle 3, Chapter 15, Hawai'i Administrative Rules (HAR). The Draft EIS would discuss how the project conforms to State Land Use District Guidelines.

The majority of the project area is designated as State Conservation District. Conservation District lands fall under the jurisdiction of the State Board of Land and Natural Resources (BLNR), which has the authority to establish Conservation District subzones. Almost all of Kawainui is within the "Protective Subzone," which includes the most environmentally sensitive lands; valuable resources such as restricted watersheds, wildlife sanctuaries, and other unique areas. Relevant permitted uses within the protective subzone include:

- *Public Purpose Uses:* Land uses undertaken by the State of Hawai'i or its counties to fulfill a mandated government function, activity, or service for public benefit and in accordance with public policy and the purpose of the conservation district. Such uses may include transportation systems, water systems, communications systems, and recreational facilities.
- *Sanctuaries:* Plant and wildlife sanctuaries, natural area reserves, and wilderness and scenic areas, including habitat improvements under an approved management plan.

A smaller portion of the project area is within the Urban District. The Urban District areas are primarily the uplands within Subarea B (along Kapa'a Quarry Road), Subarea C (Kapa'a-Kalāheo) and Subarea E (behind Castle Medical Center and the Kūkanono subdivision).

Permitted uses or activities in the Urban District are regulated by the City and County of Honolulu. Figure 6.1 highlights the location of the project area within the State's Land Use Districts and notes the State Conservation District subzones located within the project area.

The Draft EIS would discuss what, if any, land use approvals are required for the various master plan improvements in the Conservation and Urban Districts.

6.2.2 Chapter 344, HRS, State Environmental Policy

Chapter 344, HRS outlines the State's Environmental Policy that establishes State guidelines for encouraging a balanced and productive relationship between people and the environment. The Draft EIS would discuss how the project conforms to the various policies and guidelines in Chapter 344, HRS.

6.2.3 State Wildlife Sanctuaries

The project area includes two State-designated wildlife sanctuaries. The Kawainui State Wildlife Sanctuary and the Hāmākua Marsh State Wildlife Sanctuary are regulated under Title 13, Chapter 126, HAR. Pu'uoehu Hillside is not designated as a State wildlife sanctuary but is considered part of the Hāmākua Marsh State Wildlife Sanctuary because of its role as the area's main watershed. The Wai'auia portion of the Kawainui Flood Control Levee and Wai'auia subarea is the only project area wetland that is not classified as a wildlife sanctuary. The project's conformance with State Wildlife Sanctuary regulations would be discussed in the Draft EIS.

6.2.4 Coastal Zone Management Act

The State's Coastal Zone Management Act (CZMA) was approved in 1977, and its policies and regulations are discussed in Chapter 205A, Hawai'i Revised Statutes (HRS). The statute also implements the federal Coastal Zone Management Act (CZMA) of 1972 (see Section 6.1.8 above). The CZM area includes all of the State's terrestrial lands and the area extending seaward from the shoreline to the extent of the State's management authority, to include the territorial sea.

The policies of Hawai'i's CZM Program focus on the impact a project may have on recreational, historic, and ecological resources among other broad concerns. The CZM Program and the project's consistency with relevant CZM policies would be discussed in the Draft EIS.

6.3 CITY AND COUNTY OF HONOLULU

6.3.1 General Plan, City and County of Honolulu

The General Plan of the City and County of Honolulu is a comprehensive statement of objectives and policies which sets forth the long-range social, economic, environmental, and design objectives for O‘ahu. The General Plan serves as a guide for government, private enterprise, communities, and individual citizens around 11 areas of concern. The Draft EIS would discuss the project’s conformance with relevant plans and principles of the General Plan of the City and County of Honolulu.

6.3.2 Ko‘olau Poko Sustainable Communities Plan

The City’s Development/ Sustainable Communities Plan (SCP) program provides a regional level framework to implement the City’s General Plan objectives. The Ko‘olaupoko district is one of eight geographic regions of O‘ahu that are part of the Sustainable Community Plan program. The project area is located within the Ko‘olau Poko region. The region-specific plan governing this district is referred to as the Ko‘olau Poko SCP. This plan aims to preserve the natural, cultural, and historical resources of the region while protecting the residential character of its neighborhoods. The Draft EIS would discuss the objectives and policies of the Ko‘olau Poko SCP that are relevant and applicable to the proposed project, including open space preservation, protection of historic and cultural resources, and provision of recreational opportunities.

6.3.3 City Special Management Area (SMA)

The City’s Special Management Area (SMA) program is related to the State CZM program. The SMA permitting system is a management tool to assure that uses, activities or operations on land within a SMA comply with the CZM objectives, policies, and guidelines. The Kawainui-Hāmākua Complex is located within the City’s SMA is subject to the requirements of Chapter 25, Revised Ordinances of Honolulu (ROH).

SMA use permits are issued by the City and County of Honolulu. Several initiatives within the project area have previously been authorized under a SMA use permit, including various pond and habitat restoration activities (Resolution 01-58) and improvements at the Gateway Park Mōkapu site (Resolution 02-339).

The Draft EIS would discuss the project’s conformance with the policies and objectives of the City SMA program and the need for additional SMA use permits for proposed activities. Figure 6.2 highlights the location of the project area in relation to the City and County of Honolulu’s Special Management Area.



Source: State of Hawai'i GIS Data

Kawainui - Hāmākua Master Plan

Figure 6.2 - County of Honolulu Special Management Area

Kailua, O'ahu



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6.3.4 City Zoning Regulations

Permitted land uses and activities under the City's jurisdiction are prescribed under Chapter 21 Land Use Ordinance (LUO) of the City's Revised Ordinances of Honolulu, as amended (City and County of Honolulu 1990). Figure 6.3 shows the City zoning districts relevant to the project area. The majority of the project area is within the City's P-1 Restricted Preservation district. A smaller proportion is in the P-2 General Preservation district. An area near the Wai'auia subarea is within the R-5 Residential district. The Draft EIS would address the project's consistency with the development standards and permitted uses allowed under these zoning regulations.



Source: State of Hawai'i GIS Data

Kawainui - Hāmākua Master Plan

Figure 6.3 - County of Honolulu Zoning Districts

Kailua, O'ahu



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CHAPTER 7: AGENCIES AND ORGANIZATIONS TO BE CONSULTED



Consultation with various government agencies, community organizations, and individuals would be conducted as part of the environmental review process. Copies of the EISPN would be distributed to the individuals and parties listed below. Other consultation efforts would be conducted with relevant organizations as part of the development process for the Draft EIS.

Federal

U.S. Department of the Army, Honolulu District Corps of Engineers, Regulatory Branch
U.S. Department of the Interior, Fish and Wildlife Service
U.S. Department of Agriculture, Natural Resources Conservation Service
U.S. National Oceanic and Atmospheric Administration, National Marine Fisheries Service
U.S. Environmental Protection Agency, Region 9

State of Hawai'i

Department of Accounting and General Services (DAGS)
Department of Business, Economic Development and Tourism (DBEDT)

- DBEDT, Director
- DBEDT, Land Use Commission
- DBEDT, Office of Planning

Department of Defense (DOD)

Department of Education (DOE)

Department of Health (DOH)

- DOH, Director
- DOH, Clean Air Branch
- DOH, Clean Water Branch
- DOH, Environmental Planning Office
- DOH, Wastewater Branch

Department of Land and Natural Resources (DLNR)

- DLNR, Chairperson
- DLNR, Commission on Water Resource Management
- DLNR, Division of Aquatic Resources
- DLNR, Division of Conservation and Resources Enforcement
- DLNR, Division of State Parks
- DLNR, Engineering Division
- DLNR, Land Division
- DLNR, O'ahu Island Burial Council
- DLNR, Office of Conservation and Coastal Lands
- DLNR, State Historic Preservation Division

Department of Transportation (DOT)
Office of Hawaiian Affairs (OHA)

City and County of Honolulu

Board of Water Supply (BWS)
Department of Community Services
Department of Design and Construction
Department of Emergency Management
Department of Enterprise Services
Department of Environmental Services
Department of Facility Maintenance
Department of Parks and Recreation
Department of Planning & Permitting
Department of Transportation Services
Honolulu Fire Department
Honolulu Police Department

Utilities, Elected Officials, and Organizations

Hawaiian Electric Company, Inc.
Hawaiian Telcom
Time Warner Oceanic Cable
Senator Laura Theilen 25th Senate District
Senator Jill Tokuda, 24th Senate District
Representative Chris Lee, 51st House District
Representative Cynthia Thielen, 50th House District
Representative Ken Ito, 49th House District
Kailua Neighborhood Board (KNB) No. 31
Kāneʻohe Neighborhood Board No. 30
Le Jardin Windward Oʻahu Academy
Maunawili Community Association
Pōhakupu-Kūkanono Community Association
Pacific American Foundation
Hoʻolaulima iā Kawainui (Hoʻolaulima)
Castle Medical Center
Harold K.L. Castle Foundation
ʻAhahui Mālama I Ka Lōkahi (AML)
Hui Kanaka ʻŌiwi
Kailua Hawaiian Civic Club (KHCC)
Hikaʻalani
Kailua Chamber of Commerce
Kailua Hawaiian Civic Club
Kailua Historical Society

Ke Kahua O Kualī'i (Ke Kahua)
Hawai'i's Thousand Friends
The Environmental Council
Lani-Kailua Outdoor Circle
Hui o Ko'olaupoko
Sierra Club, Hawai'i Chapter
The Nature Conservancy of Hawai'i
Windward Ahupua'a Alliance
YMCA of Honolulu – Windward Branch
Kailua United Methodist Church
Daybreak Church
Faith Baptist Church
Pillar Church
Windward Christian Church
Rock Church
Christ Church Uniting Disciples & Presbyterians
HC&D (Ameron Hawai'i)
Kapa'a I LLC (John King)

CHAPTER 8: REFERENCES



Chu, Michael S., Robert B. Jones. 1987. *Coastal View Study*. Prepared for Department of Land Utilization, City and County of Honolulu. Honolulu, Hawai‘i.

City and County of Honolulu (City). 1990. *Revised Ordinances of Honolulu, as amended*. Honolulu, Hawai‘i.

Commission on Water Resource Management (CWRM). June 2008. *Water Resources Protection Plan, Hawai‘i Water Plan*. Department of Land and Natural Resources, State of Hawai‘i. Prepared by Wilson Okamoto Corporation. Honolulu, Hawai‘i.

Division of Aquatic Resources (DAR). April 2008. *Atlas of Hawaiian Watersheds and Their Aquatic Resources*. Department of Land and Natural Resources, State of Hawai‘i. Honolulu, Hawai‘i.

Department of Health (DOH). 2007. *Report to The Legislature on The Relationship Between Various Kailua Waterways, Including The Kaelepulu Pond, and The Water Quality and Natural Resources of Kailua Beach and Kailua Bay*, State of Hawai‘i. Honolulu, Hawai‘i.

Department of Health (DOH). 2007. *Total Maximum Daily Loads (TMDLs) for Total Suspended Solids, Nitrogen and Phosphorus in Kapa‘a Stream Kailua, Hawai‘i*, State of Hawai‘i. Honolulu, Hawai‘i.

Department of Health (DOH). 2012. *2012 State of Hawai‘i Water Quality Monitoring and Assessment Report: Integrated Report to the U.S. Environmental Protection Agency and the U.S. Congress Pursuant to §303(d) and §305(b), Clean Water Act (P.L.97-117)*, State of Hawai‘i. Honolulu, Hawai‘i.

Department of Planning and Permitting (DPP). August 2000. *Koolaupoko Sustainable Communities Plan*. City and County of Honolulu. Honolulu, Hawai‘i.

Division of Land and Natural Resources. May 25th, 2012. *Acquisition of Private Lands and Set Aside to Division of Forestry and Wildlife for addition to the Hāmākua Wildlife Sanctuary at Kailua, Ko‘olaupoko, Oahu, Tax Map Key (1) 4-2-003:017*. PSF No.:09OD-111, State of Hawaii. Honolulu, Hawaii.

“DOH Aquifers”. 2011. [ESRI shapefile]. Digitized by the U.S. Fish and Wildlife Service.

Drigot, D.C. and M.B. Seto. 1982. *Ho‘ona‘auao No Kawai Nui: A Multi-Media Education Guide*. University of Hawai‘i at Manoa, p.140.

Gland. Convention on Wetlands (Ramsar, 1971), Culture Working Group. September 2008. http://www.ramsar.org/sites/default/files/documents/library/cop10_culture_group_e.pdf

Helber Hastert & Fee, Planners, Inc. (HHF). August 2012. *Final Environmental Assessment; Kawainui Marsh Wetland Restoration and Habitat Enhancement Project*. Prepared for the Department of Land and Natural Resources, Division of Forestry and Wildlife. Honolulu, Hawai‘i.

HHF Planners. May 2014. *Kawainui-Hāmākua Complex Master Plan, Draft*. Prepared for the Department of Land and Natural Resources, Division of Forestry and Wildlife and the Division of State Parks. Honolulu, Hawai‘i.

Ho‘olaulima iā Kawainui (Ho‘olaulima). July 2012. *Interpreting Kawainui-Hāmākua; Recommendations for the Kawainui Master Plan Update*. Honolulu, Hawai‘i.

Krock, Hans-Jurgen and Fujioka, Roger. October 1993. *Kailua Bay Bacteriological Water Quality and Circulation Assessment Report (KB-6)*, Water Resources Research center, University of Hawai‘i at Manoa. Honolulu, Hawai‘i.

McGuire, Christina. December 2006. Effects of Introduced Fish on Aquatic Insect Abundance: A Case Study of Hāmākua Marsh, O‘ahu Hawai‘i. Unpublished. University of Hawai‘i. Honolulu, Hawai‘i.

Oceanit Laboratories, Inc. (Oceanit). June 2006. *Kawai Nui Marsh Invasive Aquatic Plant Study*. Prepared for U.S. Army Corps of Engineers. Honolulu, Hawai‘i.

Orr, Maria, McNamara, Sean, Palama, Francine, and Yent, Martha (Unpublished). November, 2011. *Draft Ulupō Heiau Cultural Resources Management and Landscape Plan*. Prepared for: ‘Ahahui Mālama I Ka Lōkahi, Kailua Hawaiian Civic Club, and State Department of Land and Natural Resources, Division of State Parks. Honolulu, Hawai‘i.

Ramsar Convention Secretariat (Ramsar). 2014. *Introducing the Convention on Wetlands*. Rue Mauverney 28. GH-1196 Gland, Switzerland.

Sustainable Design & Consulting, LLC. (SD&C). January 2011. *Draft Environmental Impact Statement; Kapa‘a Light Industrial Park Project*. Prepared for Kapa‘a I, LLC. Honolulu, Hawai‘i.

State of Hawai‘i. January 2010 (as amended). Hawai‘i Administrative Rules. Title 13, Department of Land and Natural Resources; Subtitle 5; Forestry and Wildlife; Part 2; Wildlife; Chapter 126, Rules Regulating Wildlife Sanctuaries.

State of Hawai‘i. April 2008 (as amended). Hawai‘i Administrative Rules. Title 11, Department of Health; Chapter 200, Environmental Impact Statement Rules.

State of Hawai‘i. 2007 (as amended). Hawai‘i Revised Statutes. Chapter 343, Environmental Impact Statements.

State of Hawai‘i. August 2011 (as amended). Hawai‘i Administrative Rules. Title 13, Department of Land and Natural Resources; Chapter 5, Conservation District.

State of Hawai‘i. 2014 (as amended). *Hawai‘i Administrative Rules. Title 11, Department of Health, Chapter 54, Water Quality Standards.*

U.S. Army Corps of Engineers (COE). December 2008. *Kawai Nui Marsh Environmental Restoration Project, Kailua, Island of O‘ahu, Hawai‘i, Final Supplemental Environmental Assessment.* Honolulu, Hawai‘i.

U.S. Fish and Wildlife Service. May 2005. *Draft Revised Recovery Plan for Hawaiian Waterbirds, Second Draft of Second Revision.* Region 1; Portland, Oregon.

U.S. Department of the Interior, Geological Survey (USGS). January 2002. *Atlas of Natural Hazards in the Hawaiian Coastal Zone.* Prepared by Fletcher, Charles H., Grossman, Eric E., Richmond, Bruce M., and Gibbs, Ann E. in cooperation with University of Hawai‘i, State Office of Planning, and National Oceanic and Atmospheric Administration. Geologic Investigations, Series I-2761. U.S. Government Printing Office.

Western Regional Climate Center (WRCC). 2010. *National Oceanic and Atmospheric Administration, U.S. Department of Commerce. Historical Climate Information. Climate Data Summary.* [<http://www.wrcc.dri.edu/index.html>] (accessed April 2011).

Wilson Okamoto Corporation (WOC). July 1994. *Kawai Nui Marsh Master Plan.* Report R-100. Prepared for State DLNR, DOFAW and Division of Water and Land Development. Honolulu, Hawai‘i.

